

BOOKS

If you are using working with learning about, affected by or simply interested in computers, there is an NCC book for you.

Catalogue FREE from:
The National Computing Centre Limited
Central Road, Marchwood, MI 120
Telephone 061 223 6333 Telex 668942

NEWS IN BRIEF

NCR two-day strike threat

THREE HUNDRED strike action by NCR service engineers on Monday and Tuesday this week (CW, February 14) in support of a pay claim was called off after the company made two revised pay offers.

The strike was postponed by ASTMS representatives so that the 750 engineers could be balanced on whether to accept one of the offers, which would give a 1% across-the-board increase, compared to the previous 18% offer.

But union representatives have recommended that the men reject the offers and strike on February 25 and 26.

A feasibility study is being carried out at the National Theatre to see how the box office can best be computerised. With these theatres playing an important role in the arts, the study and labour intensives, the aim is to make them as efficient as airline bookings.

500th printer

PERIPHERAL wholesaler X-Data of Slough has delivered its 500th printer. And the company, formed in January 1978, expects to deliver its 1,000th printer by May.

BCS AGM move

THE Council of the British Computer Society is to move away from London for its annual meeting which is to take place in the Council House, Birmingham on October 9, so that more members will be able to attend.

COMPUTER WEEKLY

European bureaux bid for Lowndes-Ajax

TWO large Continental bureaux have confirmed that they are bidding for the UK bureau Lowndes-Ajax, which is being sold by the Hill Samuel group.

The two are Centre Informatique Générale of Brussels and the largest European-owned bureau group, the French company Générale de Service Informatique.

CIG in Brussels said it was interested in taking over Lowndes-Ajax as part of its international expansion plans. In addition to its big IBM-based centre in Brussels, CIG

also owns bureau operations in Spain, Portugal, Brazil and Argentina and is soon to acquire a bureau in Mexico. CIG's turnover stands at \$40 million a year.

GSI of France, which is the biggest European-owned bureau group, already has a firm foothold in the UK through its ownership of the former CRC operation. GSI's management in the UK is keen on the takeover. GSI already owns several big IBM-based bureau centres around Europe.

Hill Samuel was not prepared to comment

on its reasons for wanting to sell Lowndes-Ajax, but its decision could have been affected, at least partly, by the impending departure of Peter Merrick, who has been managing director of Lowndes-Ajax for the last 11 years and who is now leaving to set up his own firm (CW, December 20/27, 1979).

GSI and CIG are both owned by major organisations. GSI is part of the French electrical giant, CGE, while CIG is owned by the big Belgian bank, Société Générale.

£2.5m study centre to investigate effect of technical change

A RESEARCH and study centre for investigating the effect of technical change on society is to be set up by the Leverhulme Trust in conjunction with the Science and Social Science Research Councils.

About £2.5 million is to be devoted over the next five years to support 20 researchers who will look into the use of natural resources, how the labour force adapts to change, and the trade-off between economic advance and social loss.

Chairman of the governing body of the Centre for the Analysis of Technical Change, as it will be called, is to be Sir Michael Swann FRS, a zoologist who is

also chairman of the governors of the BBC. Other staff have not yet been chosen, nor has the location of the Centre.

The Leverhulme Trust, a charitable offshoot of Unilever, is committing £1.5 million to the project, and each of the research councils will pay an additional £525,000. At the end of five years there will be a review before another five years' funds are committed.

The Centre's work is intended to boost the economy, promote the application of technical developments, and help the research councils choose their policies. "A continuing theme," according to the trust, "will be

the way in which the obstacles to the creation and sensible use of wealth can be removed."

Decision making and the formation of expectations will also be studied.

Manufacturing technology will also be looked into, how it can be advanced and whether a substantial domestic capacity in certain basic industries should be maintained.

The Centre will produce publications and run seminars and conferences to involve people from outside in its work. Most of the staff will probably be on secondment from industry, universities, and government departments.

Triumph-Adler home computer bid

From front page
costs £8,500 and has applications software available, is being launched this week.

Michael Davies, managing director of Adler Business Systems, Triumph-Adler's UK subsidiary, said the personal computers would be sold through the company's existing network of dealers, distributors and shops.

"In the UK we have 50% of the typewriter market, gained from strong indirect marketing

through almost 1,400 dealers and distributors," he said. "It makes sense for us to use these channels for the Alphastar."

Davies said Volkswagen's backing was not only allowing Triumph-Adler to move into the personal computing and distributed processing markets, but also enabling it to become a supplier to original equipment manufacturers. It was already

selling printers in this market and would expand this operation.

"Our main concern, however, will continue to be to consolidate in the end user market," he said. "We will continue to grow in the small business market." As if to prove this point, the company is launching a magnetic ledger card system, TABS 20, this week.

Receiver in at Gamma

From front page

back Gamma's holding from the receiver and have already changed the company's name back to the original Fars Computer Services. Fars main business is financial packages for mainframes.

Also unaffected by the crash are the line-up of firms in which the Gamma Group had minority holdings until they bought themselves out last year. These firms are Karlin Computer Systems, formerly Gamma Computer Products, General Terminals and Systems, which used to be called Gamma Telecommunications Systems, and GBS Interactive Systems, formerly Gamma Business Systems (London).

Another operation that will be

affected by the crash is the Gamma Computer Corp, the US subsidiary set up last year in an ambitious attempt by Gamma to take a share of the US market for DEC-based systems (CW, May 24, 1979). Gamma's confidence was boosted by the fact that its own turnover of well over £3 million a year was a lot higher than that of most DEC systems houses in the US.

Top people at Gamma affected by the crash include managing director and founder Dr George Coggan, who had a 25% share in the company, and chairman Sir Denning Pearson, who was chairman of Rolls-Royce until it was nationalised in 1971.

Company News Comment — Page 16.

AVAILABLE FROM ATLANTIC JUNE 1980

IBM 3033 NO.8

Please call Steve Mason on 01-683 9481 for further details

£300 essay prize

"THE practical implications of office automation" is the subject of this year's prize essay competition run by the Institute of Data Processing Management and Langton Information Systems. A first prize of £300 will be awarded for the best essay of between 2,000 and 3,000 words from anyone working in industry, commerce, education, or government.

Will the impact of electronic systems in offices really be as great as has been forecast, or will office operations in the future be not all that dissimilar from those today? These are the questions that the organisers intend the competition to deal with.

Closing date for entries is May 19. Entry forms can be obtained from the IDPM at 12-13 Henrietta St, London WC2E 8NU.

CTL appointment

TONY DAVIES, founder of the test equipment company Membrain, has been appointed executive deputy chairman of the minimaker Computer Technology, Membrain was acquired by Schlumberger in 1977 and Davies' last position was that of general manager for Schlumberger's UK electronic investments.

Membrain was founded in 1964 and has been a leading supplier of test equipment to the UK electronic industry for over 15 years.

COMMA COMPUTERS LIMITED GIFTS FOR 1980

Digital LA34 DECwriter IV	Newbury Visual Display Unit from
£750	£495
Tally 1602 180cps line printer	Diablo 1640 RO Delay Wheel printer
£1295	£1675

BRENTWOOD (0277) 811131

WEST HORNODON INDUSTRIAL PARK, WEST HORNODON, ESSEX CM13 3AJ

LOWEST PRICES EVER

Printed in Great Britain by G.B. Limited, Shepperton, Bucks. and published by I.P.C. Electrical Engineering Ltd, Dorset House, Stamford Street, London, SE1 1AC



Apple Computer Ltd
2, The Doulton, Nottingham
Tel: (0602) 385254

Takeover of Decca puts Racal off Ferranti

RACAL'S takeover of all electronics manufacturing Decal last week has thwarted GEC, who has also made it less likely that Racal will be able or willing to buy Ferranti from the government.

City analysts feel that following the purchase of Decca which is now "all over bar shouting", Racal will have enough on its hands getting Decal back to break-even point, and will also be short of the necessary cash.

Much hinges on the performance of the stock market in the next few weeks, when Decal shareholders decide whether to take Racal's offer of shares for money. Racal would prefer to take the shares, but if the price falls the cash may seem more attractive.

A Racal spokesman confirmed the view that his company will be fully occupied for the immediate future with completing the Decca takeover.

The completion of the National Enterprise Board to sell Racal has been removed by changes in the Commons to the Industry Bill, but there is plenty of pressure for the sale to take place.

Racal's offer for Decca is about £103 million.

Data Preparation

We have the capacity to punch your peak loads, file set-ups or regular work on 80 column cards. Croydon: Nada Waugh. Telephone: 01-688 6047

Peter Merrick Associates Ltd
International Computer Services
Century House
57, St Paul Road
Croydon CR9 1TB

Briefing

DEC links to SNA hosts

DIGITAL Equipment computers will now link to IBM Systems Network Architecture host machines following the announcement by DEC of Phase III of its DECnet network software. This means IBM users will have another alternative to IBM's SNA distributed system.

DEC is also offering to make DECnet compatible with X25 public packet switching protocols.

Full details: page nine.

Fight for factory

HAVING lost out to Bristol in the public fight to win the first manufacturing plant to be built by Immos, Northern group Labour MPs are now after the second factory planned by the company. But there is still no news of when, or even if, Industry Secretary Sir Keith Joseph will approve the second tranche of £25 million needed to build the Bristol plant. The MPs are to meet representatives of the company's backers, the National Enterprise Board, next week.

Quest for Japan

JAPAN is the latest overseas market being attacked by Quest, manufacturer of the Micropad handprint data entry terminal. Quest marketing subsidiary, Micropad Ltd, has appointed as its exclusive Japanese distributor Marubeni Electronics which already distributes kit from firms like Data General, Perkin-Elmer and Texas Instruments.

Braille sale

ANNOUNCED at last week's IMEC exhibition was the sale of a Kurzweil Data Entry Machine Royal National Institute for the Blind to be used in the automatic conversion of printed books into Braille. It will be connected to the RNIB's GEC 4070 at the publishing unit in London. Turkeys Software, Kurzweil's UK agent, has made a "substantial contribution" towards the cost of the machine which normally sells at about £80,000.

Chip challenge

THE Challenge of the Chip exhibition at the Science Museum, London, was opened to the public this week by Norman St John-Stevens, leader of the Commons and Minister for the Arts. The show aims to explain the development of microelectronics and the impact of its application.

Hanover launch

A REPLACEMENT for the Unix 80/30 is expected to be launched in time for the launch fair in April. The machine will run under an enhanced but compatible version of the OS/3 operating system with major extensions for interactive working, and will have a dual bus architecture.

Halifax cash dispenser threat to banks

IN the fiercest challenge yet to the big clearing banks, the Halifax Building Society is running a pilot scheme in which customers at six Yorkshire branches will be offered cash dispenser facilities on accounts bearing interest at the standard 10% rate.

The pilot, exclusively revealed here last year (CW, July 12, 1979), involves installation of IBM 3624 lobby cash dispensers at two branches in Sheffield, one in Huddersfield and two in Bradford. The experiment was begun with the earlier 3614 device

installed at head office in Halifax.

Staff and retired members of staff are entitled to deposit cheque accounts, which offer chequebook facilities as well as the cash card, and pay interest at 1%. But members of the public will be able to withdraw up to £200 a day from card cash accounts paying the ruling building society interest rate. The dispensers will be available in normal opening hours, including Saturdays.

The pilot is to run for 12 months before

firm decisions on expansion are taken. The Halifax, claimed to be the biggest building society in the world, runs a loan data processing installation consisting of an Amdahl 470V/7 and an IBM 370/155 equipped with a bolt-on DAT-box which provides the paging facilities required for virtual operation.

The society has converted from MFT and OS/VS-1 to MVS. It is also installing Philips PTS 8000 cashier position and back-office terminals in 400 branches under a £10 million contract.

UK firms in race to buy GA

UK COMPANIES are among the unnamed suitors of California minicomputer manufacturer General Automation. But a US firm, Burroughs, is the first to declare an interest in acquiring the company.

Thorn and GEC are possible suitors, but neither company comments on acquisition rumours before making a formal announcement.

Thorn made a detailed study of General Automation last year and both were interested in acquiring another US minicomputer. Modcomp of Florida, before Modcomp finally assured its future through an agreement with AEG-Telefunken of West Germany.

If Burroughs were to acquire General Automation it would be embarrassing for Swift, the international banking funds transfer network consortium, since three suppliers were approved for the terminal Swift interface devices, SIDs — Burroughs, General Automation and Singer.

When Singer pulled out of the computer business, its system lost almost all credibility with the banks, and nearly all the Swift Interface business has gone either to Burroughs or General Automation. If one acquired the other it would leave only one effective approved supplier with two competing products.

Receiver called in at Compelec

THE cash flow crisis at the microcomputer systems house Compelec (CW, February 21) has forced the company into voluntary liquidation and a receiver has been appointed. But negotiations are virtually complete for its product line, user base and London headquarters to be taken over.

Managing director Roderick Vereluy declined to name the purchaser but a formal announcement is expected this week. The confirmed speculation that Compelec had debts of some £200,000. It is believed that the buyer is already in the small business systems market.

Burroughs and General Automation both compete in the banking data communication markets, and each has well-developed networking software, so that a Burroughs acquisition would look more like a move to knock a competitor out of the market than a merger of two complementary companies.

Nevertheless, buying General Automation would take Burroughs into one major new

Turn to back page

Norsk. breaks into UK varsity market

NORSK DATA has achieved a major breakthrough in the UK university sector with a £250,000 order from Reading University for a system which will provide a wide ranging interactive service for all academic departments. It will take over a lot of work currently handled by a front ended ICL 1904S at the Reading computer centre.

Reading is installing the Nord-100 and Nord-500 machines announced by Norsk Data last year and which are now the Norwegian firm's two principal computer products (CW, May 17, 1979). Two 18-bit Nord-100s with a total of two megabytes of main memory will be installed next month and one 32-bit Nord-500 will be added towards the end of the year.

The installation, which will also include 864 megabytes of



One of the latest Russian computers, a second series Rjad ES-1033, has been installed with Computronics, the big Indian computer services and marketing company. Our picture shows the new computer installed at Computronics' Bombay data centre. The machine, which has 512K-bytes of MOS memory and a processor cycling at 300 nanoseconds, is claimed to be equivalent to an IBM 370/146. It is running under release 4.1 of the OS/ES operating system.

Hitachi in talks

TALKS are under way between Hitachi of Japan and a subsidiary of St-Gobain-Point-A-Mousson, the industrial conglomerate which now has about 10% of CII-Honeywell Bull. St Gobain declines to say what the talks involve, and CII-Honeywell Bull has strongly denied French Press reports that the talks concern CII-HB marketing the large-scale IBM-compatible Hitachi M-180 and M-200 mainframes from 1982 onward.

INSIDE THIS WEEK'S CW...

SHOW TIME

The exhibition season is in full swing now. On page 15 Donald Kennett reports on IMEC, the US show which has come to Europe, while on pages 20 and 21 Robin Webster previews the UK's travelling exhibition, Computer market, which will be on the road during March.

JOB VACANCIES
PAGES 23-55

ALSO...

Computer on Inspec... 2
Letters to the editor... 3
First CAPS order... 4
Gibb's Mythology... 4
Amend's gradations... 6
Page file for programmers... 6
Software file... 7
On Spot... 8
Micro News... 12
People and Events... 14
Company News... 16
Product Notes... 17
Advanced file design... 22
Sales Pit... 24
Goodword edition... 24
VIM update... 24

Storage Technology competes on all levels

Memory Prices Down:
As low as £16,000 per megabyte

Delivery Times Enhanced:
To as little as 30 days

Storage Technology 'Universal Memory':
Fully compatible IBM 168, 168 and 303X

Contact Storage Technology Now

The world's largest supplier of storage subsystems and telecommunications products.

For further information, please contact:

Colin Cook, Sales Director, Northern Europe
Storage Technology
2 Robotic Road, Southall, Middx UB2 8LL
Tel: 01-671 0062 Telex: 283020

**Going...
Going...
Gone**

Stag terminals have moved to bigger and better premises not very far away either. So our friends and valued customers will not feel too disorientated when they visit us - soon we hope

Stag

Stag Terminals Limited
19 Court Road, Teddington
Middlesex, TW11 1AP
Tel: 01-833 5277
Telex: 277260 STAG

NEWBURY
Smart Visual Display Terminals
Prices from £495

Newbury Laboratories Ltd.
Newbury Office: 15 St. James
Newbury Road, Newbury, RG25 1HW
Tel: 0345 711 111
Newbury Sales Office: 15 St. James
Newbury Road, Newbury, RG25 1HW
Tel: 0345 711 111
Newbury Service Office: 15 St. James
Newbury Road, Newbury, RG25 1HW
Tel: 0345 711 111

Downtime

by Chad

Take the drudgery out of picketing...

WATCHING the flying steel pickets shiver through the early morning hours, I suddenly had the thought that there is an obvious growth area for British robotics. Those pickets are on the job for far longer hours than when they are at work. Why not save them all the drudgery and have them do processor-driven picketing?

Audio tape loops could enable them to shout out their slogans endlessly with no problems of hoarseness. With a simple cam follower device the machines could shake their placards up and down.

We could also have microprocessor-driven policemen, freeing all those hundreds of bobbies to go and hunt down computer criminals. During slack periods the micros would run AI programs to try and figure out Lord Denning's judgments.

This brings to mind the idea I first heard from industry pundit Adrian Norman, that the solution to the unemployment problem is a vast expansion of the quaternary sector of the economy. After the farming, manufacturing, and service



"This one's approved by Dr. Boyson."

In place of jargon

I AM always poo-pooing the idea of computers taking over, but after this news from the West Midlands I may have to eat my words.

Words are what it is all about, as it seems a special language has been devised for use by Birmingham City Council staff to make things easy for the computer. A set of words has been dreamed up for dealing with planning applications, and each has to be eight characters long, to fit in with someone's idea of what computers can and cannot handle.

In "plan-talk", properties are described by a combination of words such as "uglyfront" (fairly clear what that means), "prayuses" (religious buildings), "smelly-d" (Indian restaurants, sewage works), "keepsop" (the retaining of shopping facilities), "facemats" (facing materials), and "treegard" (protecting trees).

This is supposed to replace "the cumbersome bureaucratic jargon of the past," would you believe.

As if this weren't bad enough, it is claimed that this perverse computer dictionary distinguishes numerical data by putting the word "number" in front of it. Some programmer has forgotten to remove the word on output, and this explains strange council notices that have been appearing such as a planning application for "Number fifty greyhound resting kennels."

GILB'S MYTHODOLOGY

N² charting and automated design methods: a reader's view

A LOT of readers were interested in my description of TRW Systems' N² charting method (CW, December 6, 1979). Among the correspondence was a letter from P. S. T. Buckfield, who is data facilities engineer in Rolls-Royce's Aero Division.

He wrote, "Your note on the N² chart reminded me that I worked on a system for matrix representation of data relationships nearly a decade ago."

"What I devised was a scheme not merely for tabular display of system relationships, starting from data requirements, but for a design tool which conceivably could lead to automatic programming of a system from a statement of requirements."

"Very briefly, any system is describable in terms of owner/member relationships between its parts. If a matrix is formed by assigning the Y coordinate as the set of owning parts and the X coordinate as the set of member parts (which can be identical with the owner parts), then the elements of the matrix would be '1' to indicate the presence of an owner/member relationship between two items in the Y and X coordinates respectively. Absence of a '1' (or a zero) implies lack of such relationship."

"Thus, for any particular application, only the relevant relationships or links are entered."

"Now, if the items along the Y and X coordinates are names of data items, then we may consider a database covering a variety of user applications and containing all the associated relationships. In order to build up such a database, each application can be expressed in terms of a sub-matrix applying to that application only. If all the sub-matrices are then summed by matrix addition, the sum matrix will contain all the relationships relevant to all the applications so far loaded, and the value in each element of the database matrix will indicate the number of application occurrences of a relationship."

"The matrix elements may be further incremented by use of a weighting factor depending on such variables as frequency of occurrence, priority or importance of the relationship, etc."

"A complex system may be built up from a set of simpler systems in this way. The method

offers other virtues, such as the ability to deduce the structural form of a system. For example, if all the links are on a diagonal, then a simple string structure is indicated. Links on a particular row indicate a single rank of elements on the same level. Multiple entries in a row indicate branching (a tree structure). Multiple column entries indicate a multiple parent. Both multiple row and multiple column entries including common elements indicate a network structure. If a link appears below a principal diagonal, then a ring is present."

"The principle lends itself to expression of relationships at any level — basic element, segments, files, databases, or any type of object — data items, programs, systems, in any meaningful owner/member relationship."

"Calculation and manipulation may be performed on matrices to yield other useful results."

"Given the effort for development, it is possible that much of system design and construction could be automated. An ideal language for this would be APL, with its capability to handle matrices."

"If suitable report generators were designed, the system would comprise a valuable data dictionary, which would be built as a by-product of system design."

Buckfield does not mention the many attempts that have been made to create automatic design systems.

Let me mention a few: the most long-standing project still alive might be Professor Daniel

Teichrow's ISDOS project at the University of Michigan (see his paper in Infotech report on Software Reliability).

TRW Systems has a number of automated system design aids at several levels of detail: for example, RSL-Data Descriptions (Requirements Specification Language) in the TRW internal publication, A Requirements Engineering Methodology for Real Time Processing Requirements. The fact that even TRW, with its effort and investment in this sector, does not have full design automation, is a measure of the difficulty of the task.

On my desk this week I got an invitation from Christer Jaderlund to see a presentation of Cogitor, a form of automatic system design. I know enough of Jaderlund's previous work in this area to treat it with respect. Cogitor is described as "an intellectual robot which supports thinking and problem solution in all phases of system development. It interprets and translates system specifications in a natural language into system solutions in system-matrix format. The solutions are tested automatically. Finally the solutions can be manually or automatically translated into a program — for example Cobol."

Cogitor is based on a Zilog microprocessor and an ISC colour VDU. Those who want more details might start by writing to Systematik AB, Box 3369, S 163 03 Spanga, Sweden. Otherwise, I'll try to share more details, as I get them, with CW readers.

This list is not exhaustive but



Tom Gilb is an independent consultant, lecturer and author on computing topics.

any means, but it should serve document the point that should first get to know existing automated design projects before deciding what can do to further the state of art.

As readers of my column might suspect, I have my pet ideas on automated system design.

My basic thesis is that something like an automated version of the Design by Objectives tools, which I described in number of columns in 1979, is automated. I also believe this is the main deficiency of present tools: they cannot in attribute specifications (reliability, portability and like) and translate these high-level design techniques into specifications. Too much what exists is really either generators, high-level practical languages or structured-processing systems.

These are not truly design aids. Anyway, und ideas are working in an automated form on my part would be highly sceptical at their practical validity. I only hope that the act of trying to automate them will make clear to me that I don't know enough about the process. I perhaps I will learn more.

Perhaps there are examples software design automatic which some readers would like to share with us either in letter or article form. Be assured, we are waiting to hear from you. One of the functions of computer Press is to inform what exists so that we can reinventing the wheel.

Retrieval package devised by UK Atomic Energy Authority

AN information retrieval package aimed at combining the facilities of database management systems with text search systems has been devised by the UK Atomic Energy Authority, in conjunction with Turnkey Software of Amersham.

Called Lexiboss, the package runs on the Digital Equipment PDP-11 and can handle structured, interrelated data, numerical information, and large volumes of free-text.

Lexiboss was developed at the UKAEA

National Centre of Systems Reliability originally for handling reports and legislation. It grew out of the Databoss system of Florida Computer in Miami. A PDP-11 running under RSTS-E with Lexiboss can deal with 20 simultaneous

users and over 200,000 documents. Different classes of user, and different levels of security, are provided for in Lexiboss. Some users input data or edit and classify it when it is in, while others can only inspect it.

Amdahl predicts a 40% rise in orders

AN increase in Amdahl worldwide deliveries of 40% over the 1979 figure of more than 100 machines was forecast for 1980 by Bill O'Connell, senior vice-president for marketing, in London last week.

With the company's treasurer Ed Thompson, and Dr Andy Wang, director of technology, O'Connell is touring Europe making a series of presentations to users and prospective customers.

O'Connell said he expected business volume to be up by about 20% in 1980 but agreed that the swing from buying to leasing had caused some problems. Sales of machines had fallen from about 90% of business to 50%. As an example of the impact this could have on

turnover, he said a sale could produce £1.5 million whereas a lease meant an income of about £50,000 a quarter.

"This can be a good thing in the long term, but it can cause problems of cash forecasting," said O'Connell.

To cope with these changes in the market and to support future development and expansion Amdahl had arranged a \$250 million line of credit in the US and a further \$100 million had been raised in Europe.

As far as the market in Europe was concerned, O'Connell was emphatic that Germany would be the best area for Amdahl. He rated it to have twice the potential of the "other three majors", the UK, France and Italy. The UK at present has about 18 users

Bolton and Bury opt for ICL

ALTHOUGH a number of local authorities have recently switched from ICL to other manufacturers' machines (CW, January 31), Bolton and Bury borough councils have placed a joint order for an ICL 2955/10 system valued at £700,000.

The two neighbouring authorities now operate a joint computer unit based on an ICL 1903T running under George 3

and an ICL 1703 remote job entry system. To retain the facilities offered by George 3 the councils will implement ICL's DME+ on the 2955. Also ordered is the recently announced Range Cobol compiler that is a development of the VME/B C2 Cobol compiler.

The new machine is expected to be installed at the end of this year.

compared to 10 in Germany, but O'Connell said that this was because the UK operation under Peter Williams had been running a year longer.

Commenting on the coming IBM H-series, O'Connell agreed with the view that it was unlikely to appear before 1981 adding, "We will be ready for it when it comes, and we will be better off because of it."

He would not express an opinion of what technology IBM might use — "we never discuss IBM unless we have to" — but dismissed the likelihood of Josephson junctions being used. "I could retire in 1991 and not be worried by machines based on Josephson junctions," he said.

Technical director Andy Wang supported this view and said that Amdahl would be using ECL devices in its new range. These gave the necessary reliability combined with speed and capacity.

In respect of devices based on gallium arsenide, Wang said he thought that these would become economically practical over the next five to 10 years, but it was likely that this technology would be used sooner in government-supported projects.

Several companies are already claiming successful development with this material.



Quicker response with ITT

TRUCK maker Foden of Sandbach, Cheshire, has installed a 30-terminal ITT 3280 visual display system to improve its response time to customers' inquiries. All departments in the company update the relevant parts of the database held under IBM's IMS database management system. The information is then available to enable the design department to put together a final specification within half a day on any configuration of vehicle required and for the

service organisation to quote on delivery of parts to depots and distributors around the world.

The £60,000 system is a plug-compatible replacement for the IBM 3270 information display system previously used. The ITT system is said to have the advantages of better controls on the terminals and easier transmission to a printer of a successful test.

Pictured here is one of the many ITT 3280 screens.

Bureau arson charge—five cleared

FIVE out of six hotel workers who were accused of setting fire to the West End offices of Euroco Computer Services were cleared of the arson allegation at Marlborough Street Court, London, when the prosecution withdrew the charge.

But all six were sent on bail for trial at Knightsbridge Crown Court on other charges.

The six are now charged with entering offices in Newman Street, W1, on September 22 as trespassers and stealing wine, video equipment, three calculators, a calculator cover, a transistor and a fan heater, the property of Euroco Computer Services and of Learnmouth and Burchett Management Services and a clock and a lighter belonging to James Hole.

Hole is training manager of Learnmouth and Burchett. The accused are Anthony Houston, 19, a steward; Bradley Fehring, 23, Australian, a chef; Paul Taylor, 22, a commis waiter; Nigel Beach, 19, a chef; George Coleby, 18, unemployed; and Brian Kingdom, 21.

Kingdom alone faces a new charge of damaging by fire offices and contents, belonging to Euroco, Learnmouth and Burchett and the British Health Care Export Council.

Grant to university

A \$2 MILLION grant has been given to the University of Minnesota by CDB to help establish a development centre for microcomputers and information systems.

FOCUS

The world of the engineer

THAT both the IDPM and the BCS are broadly in agreement with the recommendations of the Finniston Committee on Engineering is rather strange. The BCS would hardly recognise a computer engineer unless there was a brace of degrees attached to his toolbox, while few IDPM members would regard the engineer as being a bosom companion.

The report's proposal to establish a statutory British Engineering Authority to be administered by the Department of Industry will hopefully bypass the computer industry. Setting up yet another government quango is a proposal guaranteed

Oops!

CONGRATULATIONS to all those eagle-eyed readers who spotted our statement that Roxburgh Electronics' FMC-100 three-inch minifloppy disc drive is "designed to interfere with eight-bit microcomputers" (CW, February 7). The word should, of course, have been "interfere".

And our item on the eight-part BBC television series on database systems (CW, January 31) did not make it clear that the programmes were only part of an Open University course on computer-based information systems, which is being supported by the university's computing service.

to maintain all the present problems and probably generate many more.

A few moments spent with a computer team would quickly dispel the report's complacency where professional engineers are concerned. As a breed, computer engineers are very independently minded. The common link between IBM engineers and the rest is their in-bred insistence that computing is a science based on technology. Compromise is just not on. Bypassing the fault, hoping for the best or finger-crossing are not valid expedients. Preferred operational mode is "everything off" and everybody — except the engineering team — out.

When approached, engineers adopt a casual air of indifference. Yes, they believe they have traced the fault, but until the appropriate spare board arrives they cannot be sure. Meanwhile they would not advise resumption of operations. Further interrogation reveals

that the part in question has not yet been summoned, it being lunchtime back at the engineering base.

From time to time, the engineering service manager arrives, possibly out of curiosity as to where so many of his personnel resources seem to spend their collective time. He gravely advises the DP management that he is not satisfied with the use of his machine. It is being grossly overworked and it is not surprising that faults are escalating. Additional PM time must be allocated plus a reappraisal of site engineering charges.

Engineers, then, are seldom the DPM's best friend. The thoughts prompted by the Finniston Report that most computer professionals can be regarded as engineers is notably disturbing.

DPMs skills are now far removed from the engineering base. Their role is to spread tact, diplomacy and large doses of encouragement. Any learning

which is done, is oriented towards the company, not the computer. Any steering is based on committee, not on control panel. The Finniston plan would have the computer industry labelled and classed — engineers and the rest.

Fortunately, there is plenty of time to be lost. The Department of Education and Science is holding a conference on the subject of logic, opt for independence.

10 years ago

From Computer Weekly of February 28, 1970. TWO major local authorities, Coventry and Greenock, opted for ICL System 4/70s when their Leo 111s ran out. They entered the fast-growing computer market. They were not alone. Leeds, Telford and Walsley, and many other local authorities, had also entered the market. The fact is that many of the other computing service companies are headed by professionals, who gained their skills and experience with us.

Until **MARCH 31st 1980**

10% OFF

Z8000 - AMC universal Development Systems and Evaluation Boards

Prices as follows —
The new SYS 8/8 reduced to £5333.
Z8000 Development Board reduced to £560.

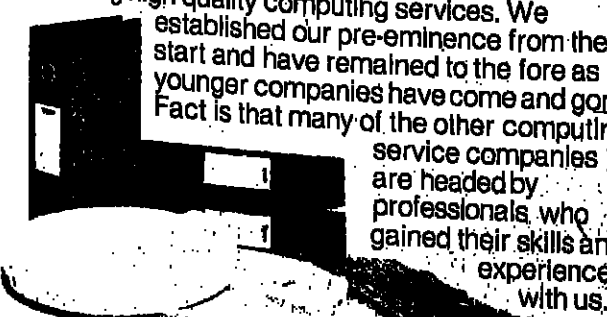
Telephone or write today to

HAWKE-Cramer
MICROSYSTEMS
Hawke Electronics Ltd, Hawke House, Green Street,
Sunderby on Thames Middlesex (Telephone 01-879 7799)

PAST HISTORIC. FUTURE INDICATIVE.

This week marks Scicon's twentieth birthday. An historic occasion in an industry as young as ours. After all, other companies are proud to celebrate their tenth anniversary.

Scicon was Britain's first company dedicated to providing high quality computing services. We established our pre-eminence from the start and have remained to the fore as younger companies have come and gone. Fact is that many of the other computing service companies are headed by professionals, who gained their skills and experience with us.



20 years

Today we are an international organisation, a member of the BP Group of Companies, with a turnover of £30 million; assignments successfully completed in over 50 countries, and 1200 computer professionals, all engaged in shaping and applying advanced technology.

The professionals working for Scicon gain invaluable experience in microprocessors, distributed processing, real-time languages like Pascal and Coral, message switching, data communications, database, and other fast developing areas of software technology.

True to our slogan, our emphasis is on completing real assignments in all walks of life: defence, energy, automation, communications, finance and manufacturing. Scicon has the best in-house computer facilities to complete such

projects including Data General MicroNova, Digital Equipment PDP 11 and VAX, Hewlett Packard 1000 and 3000, Texas Instruments 990, Intel 8080 and 8086, Zilog Z80, Univac 1100's, IBM Series/1, and an engineering laboratory too.

With a successful past like ours we have good reason to be confident of our future.

Scicon Consultancy International Ltd, Sanderson House, 49-57 Berners Street, London W1P 4AG. Telephone: 01-580 5599 Telex: 24293 SCICON G.

Scicon
consultancy international
bringing computers to life



Hamilton

Programmers' biggest enemy

THE turn of the decade prompted the Press to indulge heavily in crystal gazing and there have been quite a few predictions which, if taken seriously, would fill the average programmer with panic.

Computer Weekly was in no way exempt from this trend, and included in our glimpse into the future was the conviction that in several years' time there will be

no room and no use for programmers.

The programmer's greatest enemy, as seen by the enlightened, is the software generator.

In January we said that automatic software generators are not something of the future and do already exist. We asked why they are not more widely used (Page Six, January 17).

Jim Hamilton has been working with software generators since 1967 and for him they not only exist, but are very much his bread and butter. He is now in charge of a one-man business called Cobra Systems and Programming which provides consultancy and development on Cobra.

Cobra, which stands for Cobol Rearranger, was conceived in

1968 by Hamilton himself and Alan Heywood-Jones.

Long before this, however, Hamilton had been interested in making the programmer's job simpler, and while working for Honeywell and Plessey had already made several important breakthroughs with Edward Averill.

"Honeywell had a report generator and a validating system," said Hamilton, "and basically we just made them simpler to use."

"When we both left Honeywell we met up again in 1968 at Plessey in Liverpool."

"Several school-leavers were there being trained as programmers who made all the usual mistakes, so we decided to do the same. The only trouble was that Plessey had an ICL machine, and at that time there were no report generators with ICL."

"We got one of the brightest trainees to write an update routine in Plan. At that stage Cobol came along and with it Datavet, an update that performed control breaks."

"So far so good, but there were still two major areas where we were not progressing: data control — because we had no data dictionaries at our disposal, and also lack of flexibility. We needed to generate Cobol and also needed a dictionary system."

"Cobra was born in 1968. Originally known as CLS, or Cobol Library System, we changed the name as the facilities were extended. I left Plessey in 1971, but they still use Cobra there in a slightly different form. ICL, which I joined at that point, now sells Cobra with all its machines."

Basically, Cobra is a mixture of Cobol and Cobol extensions or macros, but as Hamilton pointed out, "People tend to get scared off when you talk about macros. Extensions sounds much simpler."

When the program has found a Cobol extension it executes a program written in Dollar language — which is just like Cobol but has the \$ sign in front of each verb — then converts the pseudo-Cobol into real Cobol, and the output is a Cobol program.

"The input can be a Cobol or a pseudo-Cobol statement," explained Hamilton. "Each operand is a parameter. The program reads the parameters as data and generates a piece of Cobol source. The clever bit is that you can actually state whereabouts in the source program you want the code to go."

"Cobra enables a Cobol program to be generated using only a third, if not less, of the usual code. Extensions are not new and have been used since 1963. However, if an installation is not writing its own extensions it is necessary to have a library."

"With Mark III there will be a library to be used by any installation," said Hamilton, "so just the right amount of code can be generated to do a job — no more, no less."

We asked Hamilton if he had encountered much hostility to

by Judith Morris

Cobra and systems like it. "Selling it is one of the most difficult things," he admitted. "I actually heard programmers that they don't like it because the boring bits have been taken out, leaving just the parts where they have to use their brains. I think that's the most attractive aspect."

Another popular argument against automatic generators, that use of them will reduce staff, "No tool reduces staff," said Hamilton adamantly. "Usually the numbers of staff are increased, not decreased, because a wider range of people are brought in to write programs."

But the answer to the question of why software generators are not more widely used, is more complicated. Often when an installation has a set time a fixed budget within which to complete a project, they like to be able to stick to it.

If some wise guy comes along and says "Look, I can do a half the time and use half a number of staff," nine times out of ten he won't be greeted with open arms. No-one likes having their routines interfered with.

"People must start thinking in terms of the effect on a business if something is finished in the time," said Hamilton, "in terms of how many programmers will be saved."

Hamilton is currently working under contract for Datacube, the Swiss Bank. In a deal with Datacube he acts as a consultant for the firm while developing and creating new products.

Some of the products currently awaiting release include: ANSI 81 structured programming facilities and a TP programming generator for the ICL 2903 ANALYSE function, which is currently available, is a Cobol extension which can set up whole program except for processing.

"The aim is to make a program look like a program specification," explained Hamilton. "So not only are programs going to get shorter, they're getting more efficient."

The Swiss Bank now use Cobra after several years of similar systems in Switzerland. Are there any other installations where automatic generators are put to effective use?

Puzzler

SPRING is in the air, it's naturally your young(ish) puzzler's fancy has lightly turned to thoughts of finding a suitable alphabetic for the season (with apologies to Lewis Carroll). Here is the puzzle with all ten digits represented.

SPRING
RAINS
BRING
GREEN
PLAINS

See page 53 for solution.

SOFTWARE FILE

Independent to fill IBM support gap

FOLLOWING IBM's move to centralise software support in Birmingham, an independent company is planning to fill the vacuum left by the change in policy. David Coplowe and Mike Godman have set up Synapse Computer Services in the belief that many users feel vulnerable because it is now their responsibility to diagnose and circumvent problems before attempting to obtain a solution from IBM.

ESC boosts its European marketing

THE European Software Co, the company similar to the one motorised by the AA: a 24 hour call-out service in which familiarity with the ins and outs of an individual installation and the products it uses will get the system back on the road as fast as possible.

The breakdown service is part of a larger scheme of support, supplying general advice on developments in the systems software field and guidance on packages, as well as systems programming expertise to generate, maintain and troubleshoot the customer's systems software.

Godman emphasised that Synapse is not trying to replace in-house staff, but to supply specialist knowledge at a higher level which will help them make the most of their environment.

"In effect we are offering the same service that IBM used to, but no longer does; the friendly neighbourhood systems engineer. Employing freelancers is costly and offers no continuity, whereas Synapse staff will have detailed knowledge and documentation of an installation backed by extensive systems software experience, covering VS and VSE, CICS, DMS, and products like Librarian and Panvalet."

"The idea is to cover the danger of fewer and fewer people who know what's going on." He added: "Even IBM has encouraged us; we're already giving support to customers where it's just not worth the effort to IBM."

PEARL, the Process and Expertise Automation Real Time Language, is to become available on the Modular Computer Services' range of classic computers.

The language has received considerable support from the West German Ministry of Research and Technology and is widely used there in metals industries, power distribution, continuous process and public utilities applications.

Modcomp has already successfully implemented ISA Process Fortran and Coral 66, and is developing Pearl to run under Max III and Max IV operating systems with West German help.

Job control pack converter

THE Australian software house Clarke Computer Software, which has been steadily winning a market for its job control system JOL (Software File, January 17, November 15, 1979) has announced a DOS to OS converter for the language.

The company has a market-

ing agreement with Software Module Marketing of California, and has just sold its disc space management system DMS/OS to Shell Australia, already a user of JOL. DMS/OS interfaces with IBM's RACF and other security packages such as Boole and Babbage's Secure.

An Advanced and Intensive Course on COMPILING TECHNIQUES

BRUNEL UNIVERSITY
UXBRIDGE

on five consecutive Tuesdays, April 22-May 20, 1980

Lecturer: Prof. F. R. A. Hoggood, Head of Computing Division, Rutherford Laboratories

Author of "Computing Techniques"

Further details from:
The Secretary
Computer Science Department
Brunel University
Uxbridge UB8 3PH

by Claire Gooding

Help for small workshops

SMALL to medium-sized workshops which have no computer facilities can now have access to the Computer Aided Planning and Estimating program from the Department of Industry's National Engineering Laboratory.

The Cape system has been adapted for use on an eight-bit microcomputer with VDU, which is available from the laboratory at

East Kilbride, Glasgow, for £10,000, including disc handling software and a Fortran compiler. The earlier mainframe system is still available in ICL, IBM and Univac versions. It covers all common machining processes but can be extended to incorporate specialised processes and other functions such as documentation.

Online information system for hospital

NORTHWICK Park Hospital in Harrow, Middlesex has been using a system which is the result of a joint project between medical and computer staff in the DHSS and Perkin-Elmer.

A real time system based on P-E/32s enables laboratories and other departments to enter the results of analytical and clinical activities so that information on patients and administrative data is constantly available.

The system deals with online inquiries concerning admissions and bed status as well as dealing with medical archives. Other facilities include an automatic alarm for patient results outside accepted limits.

Northwick Park is a large district hospital with a national role in clinical research.

T-ASK available on PDP-11s

THE online interactive query facility developed by Cincom Systems for use with its database management system Total is now available to users of Digital Equipment PDP-11s. T-ASK is said to be a "simple English-like information retrieval language" which enables database users to extract up-to-date data.

According to Terry Booth, Cincom's UK manager, T-ASK was developed for the DEC equipment following an excellent response to the IBM T-ASK, which now has more than 70 users worldwide. He added:

"DEC T-ASK has incorporated several features that reflect the unique needs of the DEC environment."

Algol 60 compiler proves a success

THE Algol 60 compiler launched last year for Prime users by the software house Wootton, Jeffreys and Partners is having success among colleges and polytechnics. Its dozen users include Surrey University, North East London Polytechnic and Oxford Polytechnic.

MAS-M

Complete Application Systems for the PDP 11

MAS-M (Modular Application Systems for Minicomputers) is the latest addition to the MAS-80 family of application systems which is proven, practical, easy to implement and costs a fraction of in-house code.

Pedigree
MAS-M has been designed by Hoskyns, one of the leading software companies in the U.K., and is built upon the experience gained in implementing over 1000 elements of MAS world-wide. It also incorporates years of experience in designing and installing application systems for minicomputers.

Totally practical
MAS-M has been designed by application specialists — accountants, engineers and production managers. Implementation is fast, it is easy to use and totally practical. Documentation is second to none.

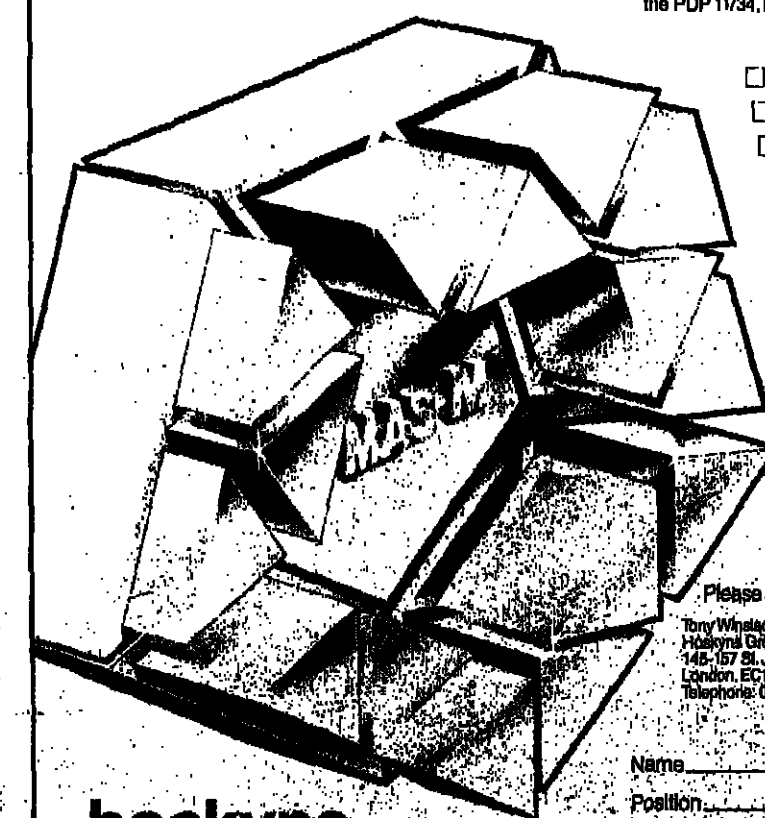
Support
MAS-M is supported world-wide in the U.K. alone. Hoskyns employs over 700 d.p. professionals.

Scope and cost
MAS-M covers the full range of commercial applications systems, each one designed for cost-effectiveness and fit. MAS-M is available at a fraction of the cost of building from scratch. It has been specifically developed to help you get the most out of the latest generation of minicomputers.

Flexibility
MAS-M is modular in design. Start with one system and then add others as your needs develop. If required the systems will interface with MAS running on mainframes.

Datasystem-500 Minicomputers
MAS-M elements are designed for Digital's family of commercial Datasystem-500 minicomputers. Datasystems are available utilising the PDP 11/34, PDP 11/44 or PDP 11/70 central processors.

- ☐ General ledger
- ☐ Accounts receivable
- ☐ Accounts payable
- ☐ Order processing
- ☐ Invoicing
- ☐ Inventory control
- ☐ Inventory accounting
- ☐ Bill of material
- ☐ Material requirements planning
- ☐ Purchasing
- ☐ Payroll



hoskyns
digital

Please tick the systems that interest you and mail to:

Tony Whitaker or Tony Redford
Hoskyns Digital Limited
145-157 St John Street
London EC1V 4JQ
Telephone: 01-251 4681

or
Digital Equipment Co. Limited
Digital House, 255-260 Kings Road
Reading, RG1 4HS, England
Telephone: Reading (0734) 563 555

Name _____
Position _____
Company _____
Address _____
Telephone _____

HEWLETT PACKARD • DIGITAL • ANDERSON JACOBSON • TRANSDATA • A M JACQUARD • MELLORDATA • NEWBURY LABORATORIES • TEXAS

KSR's
30 cps from £46 per month
120 cps from £87 per month
Portable from £63 per month
Daisy Wheel from £104 per month

Monitors and VDU's
Standard (Teletype) compatible from £33 per month
APL from £47 per month
VT52 and other options from £47 per month

ASR's
Integral terminals from £87 per month
Separate P/T Cassette units from £43 per month
Separate Diskette units from £60 per month

Contact Mike Brooke or Philip Ely Tel: Byfleet 53151 & 49618

MBS Rentals
Specialists in the renting of terminals

MBS Rentals, Aldwych House, Madderly Road, West Byfleet, Surrey KT21 1AA

• TREND • QUME • DIABLO • LEAR SIEGLER • TALLY • PERICOM • TECHTRAN

SHORT TERM RENTALS ALSO AVAILABLE

OP SPOT

Flexitime and shifts

"MY company is about to introduce a flexitime scheme. Is it possible for this to be used within the structure of a shift pattern?"

This question is put by an operator who works at a site where a three-shift pattern is employed — 8.30 to 4.30, 4.15 to midnight, and 11.45 till 9.15. Well, I don't know of any sites where flexitime is used within the shift pattern. As I see it, such a system might lead to complications, particularly in relation to the handover.

The handover is important. It is the time when shift teams meet and relate information concerning workflow and the state of the system.

It might be an idea to employ flexitime, but ensure that, say, three operators from the two shift teams concerned are on site at handover time.

I would be interested to hear from operators who work flexitime in any form.

'Breaking down jargon barrier helps us to get on with users'

THE first time I ran into Barry Richardson he rather took me by surprise.

In a conversation perhaps more aptly described as a verbal shoot-out, operations supervisor Richardson was first on the draw.

In essence, he said, "So you're the one who writes the Op Spot, are you? Well, I don't agree with most of the things you say, and I don't think you represent the views of the majority of operators."

My actual reply eludes me, although I'm sure that it wouldn't grace the pages of a publication such as this. I did, however, agree that he is entitled to his opinion, and emphasised that operations staff have only to pick up the telephone or put pen to paper in order to air their views through this column.

That little confrontation took place at the end of the first day of a conference on the future of operations staged in London by Infotech Operations. Anyway, Mr Richardson went his way and I went mine.

On reflection, I had to admire the character. It's always refreshing to meet people who are willing to speak their minds, even — no, particularly — when it is to contest something one has said or, in my case, written.

On the second day of the conference I made a point of inviting Barry to lunch. We discussed the conference and operations in general, and by the time coffee was served he had agreed to an interview on the part he plays in the industry.

So, the other week, I went to Holden Data Services in Croydon, where Barry supervises

some 15 operators in the running of an IBM 370/145 and 370/148. The systems run under DOS/VS and support some 90 users online via IBM's Customer Information Control System, CICS.

It's the in-house bureau to the Howden Insurance and underwriting group, and quite a busy installation, a fact well illustrated by the three or four telephone calls Barry received in as many minutes as we sat in the open-plan office.

Seeking some peace and quiet, we adjourned to a conference room, where he told me about the site and the part he plays there.

"One machine is dedicated to production work, while the other is used for development and providing back-up should the production system run into

problems," he said. "CICS is on from 8.30 in the morning till 6.30 in the evening. After that we run our batch work."

With online systems such as CICS, machine problems are at once evident to the user — a sick system means that he is unable to communicate with it through his console.

This tends to put extra pressure on the operations department, as its main aim must be to provide the best possible service to the user. A loss of service must be put right with speed and efficiency.

At Holden Data Services the configuration is such that all devices may be switched between the two systems. In the event of problems on the production system, the error recovery procedure goes something like this: Stop development work, switch all lines and peripherals across to the back-up system and restart production work.

Said Richardson, "Production work must take priority, so it's vital to have good back-up facilities — you know, two control units instead of one, two GPU lines instead of one; that sort of thing."

Problems can also occur at the user's end, on the line or terminal. Where local users are concerned, one of the operators will go along to see if he can help out.

The online system has helped to make him acutely aware of the needs and problems of users. So much so that he is only too willing to have his staff take them around the computer room and explain something of the workings of the machines.

"We are providing a service and so it's very important that we build a good relationship with the users," he said. "We take them into the computer room and explain things at a basic sort of level: this is a tape unit, a disc drive, CPU, VDU and so on."

"This is important as it helps break down the jargon barrier. When we talk to our users about a disc drive, for example, it means a physical device to them. It's not just a piece of jargon intended to baffle them. They know that and it helps us get on with them."

In addition to users, Richardson feels that it is extremely important for the operators to work at building good relationships with software and hardware support people.

The software side is no trouble as the technical support section lies within the operations department.

"I'm lucky in that respect because I just relate to the technical support manager. He used to be my operations supervisor and I like to think that we get on well."

Richardson advocates meeting the IBM engineers "on a give-and-take basis", but instructs his shift leaders to be firm where necessary. "Again I like to think that we have a good working relationship with our account customer engineer. You've got to work at it, but it's well worth the trouble."

"You hear all sorts of stories about engineers always being at the sites which have the best rest rooms. Well, I just try talking to them and that gets them here when we need them."

Much of his time is taken up dealing with the problems, needs and aspirations of his operations team. "We're not perfect by any means, but we're always looking

to improve our performance as a team."

It is with that purpose in mind that staff meetings are held on a regular basis. They enable the operators to put forward their views and ideas on the running of the installation.

"We held them last year but had to stop because of pressure of work and staff being on holiday leave."

"We tried having them every six weeks but found that it didn't fit in with our three-shift pattern. Once every five weeks seems to work quite well."

"We always take minutes, which are typed up and used for future reference."

Like many other sites in the industry, Howden Data Services has its difficulties in attracting and retaining staff of the right calibre.

"One of my main concerns is recruiting and keeping good operators. It's not just us though. The whole industry is faced by this problem."

Staff have left for a variety of reasons during the four and a half years Richardson has been at the installation. "People go for different reasons. We've got quite a demanding set-up, two online systems and over 90 applications, and some operators just don't seem up to it."

You hear all sorts of stories about engineers always being at the sites which have the best rest rooms. Well, I just try talking to them and that gets them here when we need them.

For that reason the site recruits at the junior level and puts the staff through its own training scheme.

"Three years ago we looked at the possibility of taking on trainees and we've had varying degrees of success. You can't just take people in off the street and make operators out of them."

"So we now take on a batch of trainees every year. Out of the 11 permanent operators we have at the moment, all but one were recruited as trainees."

New staff follow a "clearly defined training plan" during their initial six months at the installation.

"During the first three weeks they work from nine till five to get used to the people and the equipment."

"After that they spend six weeks on shift to see if they are able to put up with the demands of shift work. Some people just can't do shift work and there is absolutely nothing you can do to help them."

They then do a week's formal training — they are sent along to Infotech Operations or follow a basic operating course on video. "We train all our staff by a combination of courses run by Infotech Operations and our own in-house video library."

These include basic operator training, DOS and POWER, CICS and IBM 370 orientation.

"At the moment we're discussing with the senior operators a new training plan for the next batch of trainees."

As staff progress they attend more advanced courses on DOS/VS and POWER, as well as those relating to teleprocessing and staff supervision.

by Bernard Allen



MORRIS EDWARDS REPORTS ON A MAJOR EXPANSION OF DEC'S COMMUNICATIONS SOFTWARE

Moving closer to goal of a generalised net

WHEN Digital Equipment Corp announced its digital network architecture in 1975, its stated goal was ultimately to permit generalised interconnection of different host computers in point-to-point, multipoint or switched networks so that all users could share programs, data files and remote I/O devices system-wide.

With its latest network software products DEC moves closer to that goal. Known as DECnet Phase III, the software adds communications support for multipoint lines and dynamic adaptive routing of messages through a multi-node network.

In addition, the software provides terminal access to remote systems, and enhanced network management features that can be centralised or fully distributed throughout the network. Further, DEC laid the groundwork for interconnecting its systems with computers from IBM and other suppliers by introducing an emulator for IBM's Systems Network Architecture and making a commitment to support the X25 international protocol standard for packet-switching networks.

DEC's SNA protocol emulator software allows its PDP-11 computers running under the RSX-11M real time operating system to emulate an IBM 3790 cluster controller for interactive communications with an IBM host supporting an SNA network.

With the emulator, the PDP-11 system can function either on a point-to-point line to the IBM host or on a multipoint line with other SNA devices.

The SNA protocol emulator can maintain up to 81 concurrent, interactive logical connections with one or more programs in the SNA host. It uses IBM's SDLC line protocol and supports up to four synchronous lines at speeds to 9.6K-bps.

Three levels of access to SNA

Access Data:
distributors for...

QUME
FACIT
MICROSTAR
APPLE

We offer:
• Installation & commissioning by our own engineers.
• Service & maintenance by our own engineers.
• On-site warranty.
• Rapid call-out on breakdowns.

Access Data Communications Ltd.,
22-24 St. Street, Uxbridge,
Middlesex.
Tel: 0295 5001/2/3/4/5

protocols are available, ranging from interaction with applications in a CICS or IMS environment to SNA session initiation, termination and data flow control. In addition, the emulator offers network management features to aid in fault isolation and line evaluation.

The RSX-11M/SNA protocol emulator can be used as a memory-resident package, or in conjunction with a KMC-11A microprocessor equipped communications interface for improved line efficiency. Delivery is scheduled to begin in April.

As for its support of the X25 protocol, DEC sees this as another important communications gateway between its systems and other computers in mixed-vendor networks.

Andy Knowles, vice president, technical products, reports that the digital network architecture has been designed to accommodate an X25 interface, and that DEC will provide details of specific X25 implementations as the products become available during the next two years.

DEC's Phase III product announcement comes almost five years after the unveiling of Digital Network Architecture. DNA is a system of layered protocols that establish links and govern data transmission between computer systems. DECnet products embody the DNA architecture and facilitate construction of distributed processing networks with DEC computers.

The first DECnet software products provided for task-to-task data transfer between real time systems of the PDP-11 family over point-to-point links.

In February, 1978 DEC announced the second phase of products, which extended the network capability across all major real time, time sharing, and multifunction operating systems of the PDP-11, Vax, DECsystem-10 and DECsystem-20 computer families. DECnet Phase II also added the facility to copy and transfer data files from remote systems on user command.

Further, real time PDP-11 and Vax systems could now engage in remote resource access, which meant that users at one network node could open, read, write and close data files residing in mass storage at another node.

With its Phase III products, DEC has now concentrated on extending the communications functionality to include multipoint networks and adaptive path routing. Phase III also introduces the concept of "network command terminals", which give users at one node direct access to any other DECnet node using the same operating system.

Prior to Phase III, DECnet only supported point-to-point communications between pairs of nodes that were directly physically connected.

Now, with the multipoint capability, a host or master system can communicate with up to six remote or slave systems over a single line.

The host controls communications, polling each slave system in turn. Slaves can communicate with each other through the host, and multipoint configurations can exist as subgroups within larger networks.

enabling both master and slave systems to participate in message routing, file transfer and resource access with other systems.

Even greater flexibility is afforded by the adaptive path routing capability, which allows a DECnet network node to send messages to another through up to five intermediate nodes.

Each node maintains a routing table for the entire network. When more than one path exists between the source and destination nodes, the network automatically selects the "least-cost" path according to

line values assigned by the network manager. Initially, the routing tables are generated automatically when the software comes online. The values for each line are primarily determined by its bandwidth or data rate capability.

Routing tables are updated whenever changes in line or system status occur.

Besides optimising traffic flow, the DECnet Phase III software provides network managers with the means for evaluating overall network efficiency and initiating diagnostic tests to isolate network faults.

These management functions can either be centralised or fully distributed across all nodes. They permit monitoring of communications loads, error rates, line conditions and node status at all points in the network.

Another capability of DECnet Phase III, the network command terminal software, provides users with direct access to programs and devices on remote systems anywhere in the network that use the same operating system.

According to Knowles, there are over 500 DECnet networks in operation, supporting over 2,000 nodes. In the future, he

believes, the ratio of nodes to networks may rise as much as fivefold.

"New DECnet software will make large networks of 20 or more nodes easy to manage and more economical, as routing and multipoint capabilities lower communications expense," Knowles said.

"Forthcoming DECnet releases and other future product announcements will point toward distributed data processing as a major marketing thrust of this decade, bringing computing and its benefits into more lives with greater success and lower cost."

WHY

have Hamilton installed more
Digital word processing systems

than any other company in the world — and all because they've put together?

1. Ex-stock delivery
2. Expert user training
3. Rental, lease or purchase schemes available
4. Comprehensive range of systems
5. Full on-site warranty and maintenance
6. Communications and interfacing expertise

For further information or a full demonstration, call your local branch or complete the coupon

HAMILTON

Hamilton Rentals Limited, Station House, Newson Lane, London NW10 1PT
London 01-450 8900
Birmingham 021-235 3551
Manchester 061-848 8335/8434
Central Scotland 0501-43182
Aberdeen 0224-25301

Please send me further details of the Hamilton range of word processing systems.

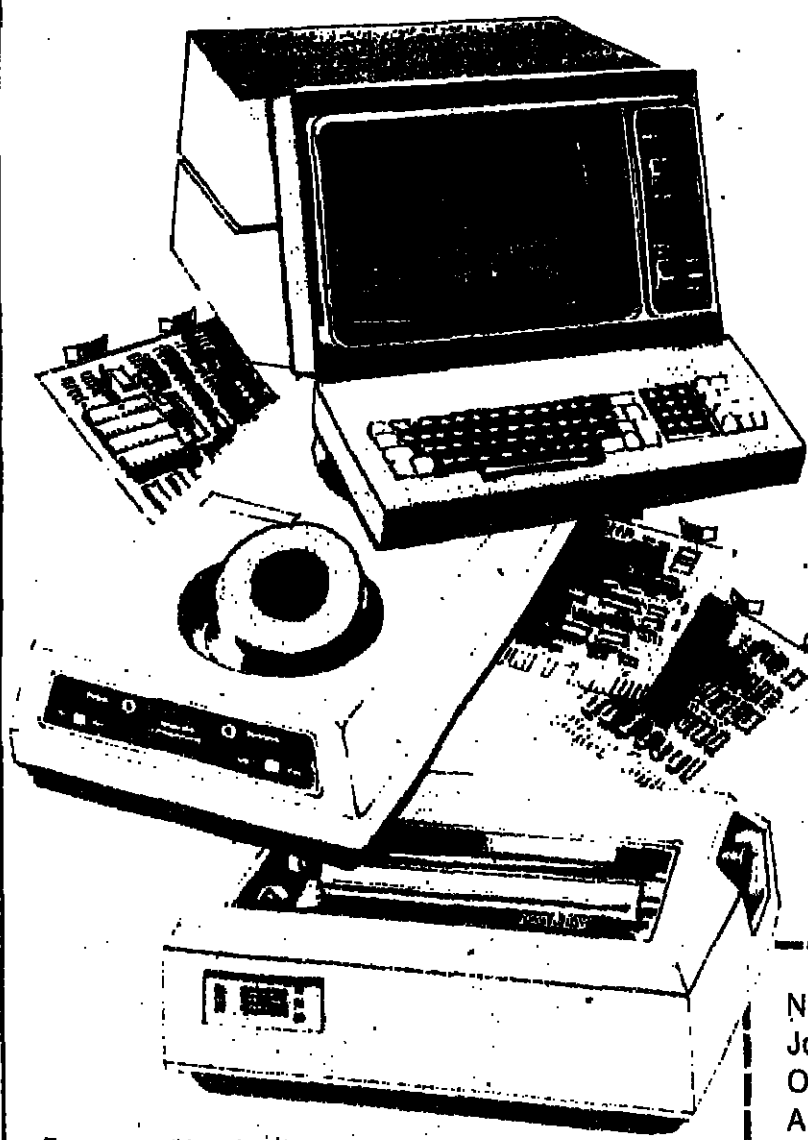
Name _____
Company _____
Position _____
Address _____
Telephone No. _____

COMPUTERMARKET'80

NORTH WEST

11, 12, 13 March 1980

New Century Hall, Corporation Street, Manchester



Hundreds of exhibits for existing and prospective users of micro, mini and mainframe computers.

Peripherals, ancillary equipment, services, software and supplies as well as computers from many leading manufacturers.

Graphics, communications, scientific and commercial systems on show — in the **FIRST COMPUTER SHOW OF A NEW DECADE**

Use this coupon for pre-registration, free admission and complimentary catalogue at Computermarket:

Name _____
Job Title _____
Organisation _____
Address _____
Postcode _____

Entry is restricted to those over 18 with an interest in computers. Further pre-registration forms are available from Couchmead Ltd, 42 Great Windmill Street, London W1V 7PA.

WE'LL EITHER MAKE YOU RICH OR VERY UNHAPPY.

We're looking for dealers who've got what it takes to sell the revolutionary Alpha Micro computer.

Included in your qualifications will be the ability and desire to sell to the end user.

That's vital. Because you won't be selling Alpha Micros to other dealers.

You'll be knuckling down to the real task of understanding other people's problems. That's the only way you can offer realistic solutions.

And you'll be dealing with probably the hottest computer to arrive on the scene in the last ten years.

The 16-bit Alpha Micro offers the same flexibility and capability as computers costing one hundred percent more.

It also comes complete with its own application packages. Hidden extras don't exist.

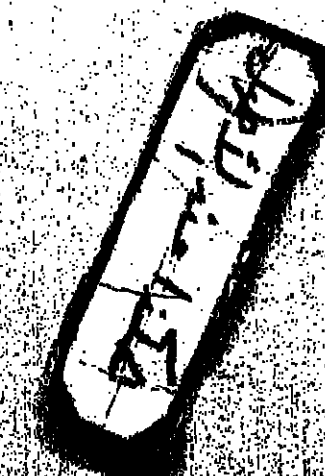
And with Alpha Micro you can lay your hand on your heart and guarantee to your customers to have it up and running in twenty eight days or less.

The Alpha Micro discount structure varies according to your individual capabilities. Therefore the more you fit into our scheme of things, the greater your reward.

If you believe that your service is a match for our product, call Barry Lloyd (U.K. Dealer Manager) on (01) 250 1616 without delay.

Or write to Alpha House, 13-27 Brunswick Place, London N1 6ED.

THE ALPHA MICRO COMPUTER



MICRO NEWS

Speeding up production at IBM

COMPONENT manufacturers are under a lot of pressure to produce a great variety of circuits, and quickly, with fast turn-around time, as a real priority. The IBM response has been the QTAT (Quick Turn Around Time) production line, which was described at ISSCC.

QTAT incorporates:

- Automated wafer handling and storage systems, including air track wafer handling, with wafer storage provided by a sector transport system and strategically placed buffer stations.

Laser scanning keeps track of wafer serial numbers.

- An automated process control system.

- A software-controlled wafer routing system which guides through the manufacturing sequences.

- Automated control of process parameters such as temperature, pressure, deposition rates, and voltages. Data is recorded on each wafer.

- Feed-forward process control, which sends production data on individual wafer to downstream tools on the QTAT line. This feature enables

improved precision process controls during wafer production operations.

- The ability to handle single wafers as well as batch processing of multiple wafers.

- Computer terminals in a manufacturing control centre and on the QTAT manufacturing line, for monitoring the wafer processing operations and logistics, and for providing access to all levels of computer process controls.

- Centralised distribution of ultra-pure chemicals, gases and materials used in wafer production processes.

Dr Ning-Gau Wu of IBM's General Systems Division holds the end product of QTAT. It is an 82mm silicon wafer, ready to be doped into 4,8mm² chips, for customised logic circuits.

Barrie Nicholson reports from the International Solid State Circuits conference



Japanese 256Ks may steal the lead

SEMICONDUCTOR devices of 64K density were positively run-of-the-mill at this year's International Solid State Circuits Conference in San Francisco which included announcements of two 256K dynamic RAM and a four-megabit ROM on a wafer.

Coming from Japan, they added weight to Texas Instruments president Fred Bucy's opening remarks that the US may lose the lead in microelectronics during the 1980s through under-investment.

The 256K devices come from NEC-Toshiba Information Systems and NTT's Musashino Electrical Communication Laboratory. No novel manufacturing processes were used in NEC's chip except 1.5-micron photolithography. However, even with this fine geometry the chip measures 4.84 x 8.59 mm. It is in a 10-pin dual-in-line package with larger internal cavity, for compatibility with existing 16K and 64K RAMs. Access and cycle times are 160 and 350 nanoseconds. Active/standby currents are 45 and 5 milliamps. It runs from a single five-volt supply.

Alpha particles promise to be a major problem with devices as dense as this, and several protective steps have been taken. Memory cell capacitance is large enough for the soft error caused by one particle, critical areas of digit lines are as small as possible and a special protective coat is applied to the chip surface.

Using one micron geometry by electron beam writing, the second 256K RAM from NTT looked more advanced. Based on a special molybdenum polysilicon technology, the chip measures 5.83 x 5.9 mm and has access/cycle times of 100/200 nanoseconds with power dissipation of 230 milliwatts. Standby power is 15 milliwatts. It runs from a single five-volt supply.

supply. Extra circuitry consisting of sense circuits and about 4K of memory is included.

IBM contributed two papers to the RAM session on a bipolar five-volt-only 64K RAM, and a 16K static RAM in merged transistor logic T²L. Based on a bipolar analogue of a field effect transistor cell, the 64K chip has an access time of 50 nanoseconds, and cycle time of 100 nanoseconds.

Development of static RAMs remains behind dynamic circuits in density but offers better speed and power. IBM's 16K static RAM accesses in 45 nanoseconds with an operating power of 225 milliwatts and standby power of 130 milliwatts. It can operate from a single power supply between 2.8 and 5.5 volts though an additional 1.7-volt supply lowers the power consumption figures to 225/130 milliwatts.

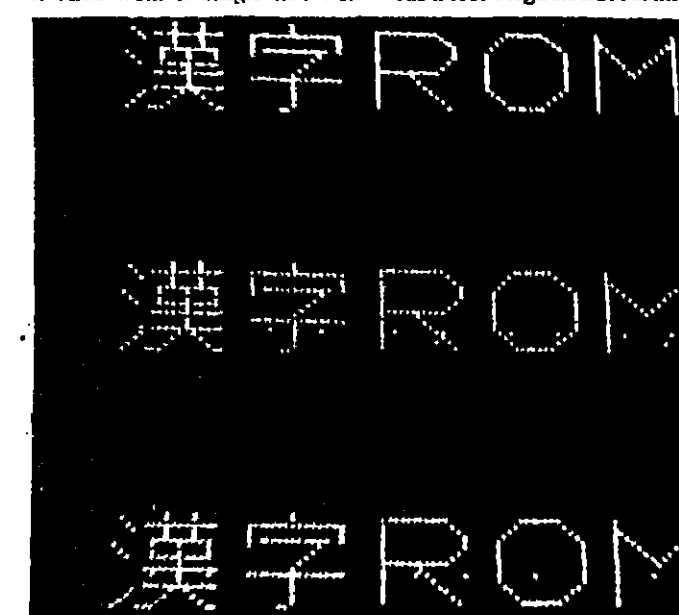
Two more 64K RAMs were described at the conference, the long-awaited Texas Instruments TMS 4164, and a device from Hitachi.

TI's device runs from a single five-volt supply and was designed with three goals in mind: chip area to be less than 35,000 mils² (square thousandths of an inch); maximum power consumption of 200 milliwatts (at five volts); maximum access time of 150 nanoseconds.

It exceeds all these requirements with a chip size of just over 34,000 mils² (equivalent to a square chip with 4.67 mm sides), a worst-case power dissipation of 200 milliwatts, and access time of 100-150 nanoseconds at a cycle time of 250 nanoseconds. Hitachi's device also requires just a single five-volt supply and has a typical power dissipation of 170 milliwatts at 300 nanoseconds cycle time. A special alpha particle protection coat has been applied to the chip surface.

The largest memory described was a four-megabit ROM taking

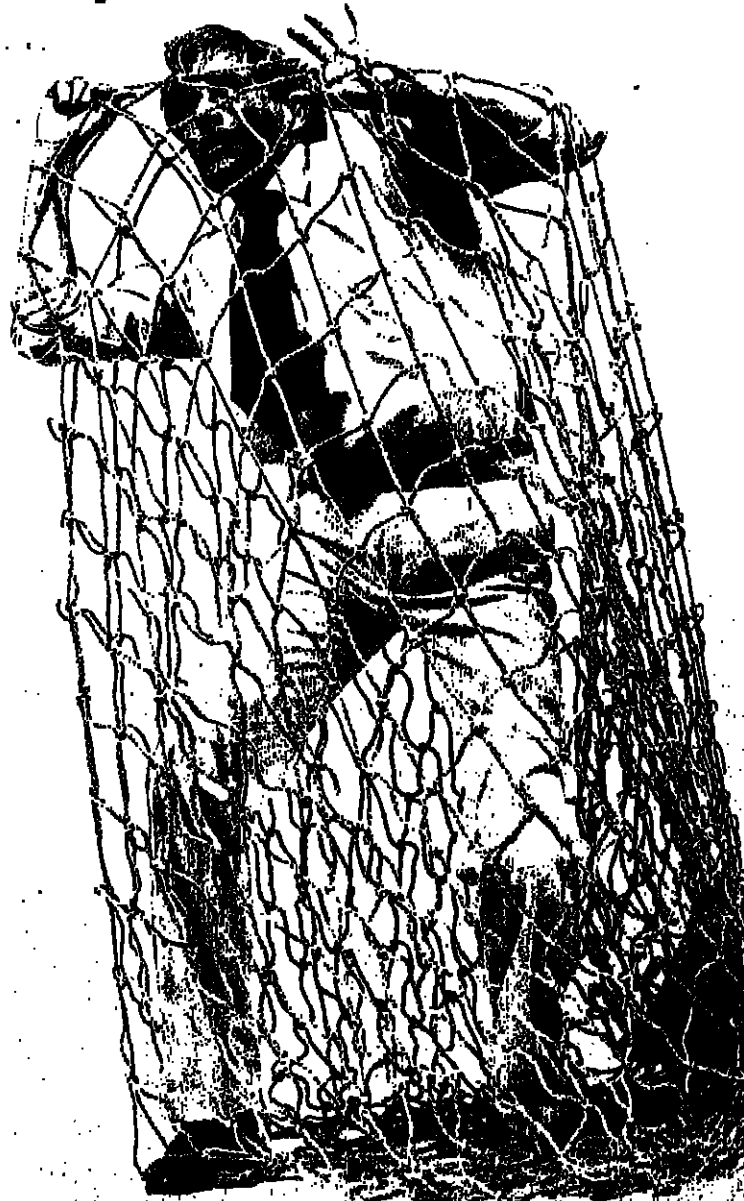
up a whole 3-inch wafer. Designed by NTT for use as a Chinese character generator, the chip is organised in duplicate halves for fault tolerance.



Character generation from a four-megabit ROM. Two sets of characters are generated and compared before the final display (top).

Looking at large interactive system DECsystem-10 or -20.

Don't get caught up in an expensive multilayered software solution.



Interactive computing isn't something you can graft on to a batch hardware or software tradition. It must be designed in. Or you lose time and money.

Waiting for delivery or wrestling with complex multilayered software that could have you and your programmers in a wrangling tangle.

So make sure the large systems of Digital Equipment, No 1 in interactive computing, are on your shortlist. The DECsystems -10 and -20 are thoroughbred descendants of the original interactive computer which was developed and introduced in 1960.

Refined. Simplified. Strengthened. Opened up wider and wider in compatibility and flexibility. Currently supporting 50 different languages.

TOPS, an efficient shared operating system that interacts productively from the moment you switch on.

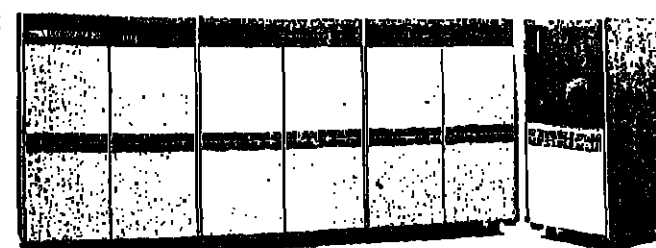
Early-used software: user-friendly, guiding and managing.

These are computers designed for the user. Any user: students, scientists, engineers, clerks. As well as for the world's top computer professionals.

Quick to install and get up. No compatibility problems.

Networking or terminal choice. Supporting many terminals even in low-priced configurations. Easy to upgrade when demand builds up.

Ready to interact at once.
Ready to deliver now.



Already at work in hundreds of applications worldwide. Available now in a wide choice of performance ranges.

Made by the No 1 in interactive computing. Put us on your shortlist. Otherwise, you haven't made a true evaluation.

Better still, call us. You won't get any promises, spoken or written. Instead you'll receive an invitation to an immediate, comprehensive demo. No surprises - except the good ones.

Like: easy-to-use software. The hard and fast delivery date we can give you. The price. And how soon a DECsystem can be amortising your investment! Ask any user.

Digital, I'd like a clear picture of how soon and how well a DECsystem could be working for me.

My application is: _____

Name: _____

Company address: _____

Tel.: _____

Send to: Terry Clarke
Digital Equipment Co. Limited
Digital House, Kings Road, Reading RG1 4HS

digital

No.1 in interactive computing

Information laws setback in Canada

DRAFTING of freedom of information legislation in Canada has gone back to square one following the Liberal Party's victory in the General Election. The Conservative Bill (CW, November 8, 1979), which had reached committee stage when

Parliament dissolved, has been lost altogether but the newly-reinstated Prime Minister, Pierre Trudeau has, after some delay, announced that he will introduce another Bill.

On the thorny question of whether there should be judicial

review over the withholding of documents by government, Trudeau said his initial Bill would not include this but he would listen to the arguments put forward.

Freedom of information campaigners are interested in what happens in Canada because this would be the first country with a Westminster-style Parliament to have such laws.

It is unlikely Trudeau will be in a hurry to bring in the legislation but he may do so by July.

Commons online soon

THE choice of a computer to provide MPs with online indexes to research material is expected to be made soon. This, at long last, will bring to fruition plans for computerising the House of Commons library which stretch back to 1874.

Planned for inclusion on the system initially are the contents of existing strip indexes in the Commons library covering Parliamentary questions, European matters, and scientific information. These strip indexes have only limited cross-indexing and rely very much on the skill and knowledge of the library staff. They are also difficult to update.

With the computer, MPs and their staffs will be able to search using personal names and keywords, without having to go to the library to do it. Communications facilities will be essential anyway - it has been decided there is no room for the computer in the Palace of Westminster, so it will have to be sited elsewhere.

The Central Computers and Telecommunications Agency will pay for the machine and run it. At the House of Commons the project is being overseen by computer development officer Richard Morgan.

Prime additions

PRIME has introduced two 32-bit minicomputers with prices as low as £38,000 for end users and less than £32,000 for systems builders. The end user machine, the 250, is a less powerful version of the existing Prime 550 while the model for systems builders, the 150, is based on the existing Prime 450.



Electronic typewriters launch

IBM's two electronic typewriters, the Model 60 and Model 60, have been launched in the UK, 18 months after their introduction on to the US market (CW, June 15, 1978). Both are priced at £1,250, and the 60 has a single-line memory and proportional spacing, while the 60 has 736 characters of RAM storage without proportional spacing.

Other companies such as Qyx and Olivetti have similar machines at the bottom end of their word processor ranges, but unlike them

IBM uses a golfball printer in the 60 and 60 instead of a daisy-wheel. Error correction is by "lift-off" tape, up to a whole line at once if desired, using the line buffer.

Formats including different margins and tab stops can be held in memory, and there are other features such as automatic centring and decimal point alignment.

Machines for the UK market will be made in Amsterdam.

● Pictured here is the Model 60.

400-page history of telecomms

MUCH of the history of telecommunications is traced in a new book, *Girdle Round the Earth*. It was commissioned by Cable and Wireless and the history centres on that company and its predecessors, Imperial and International Communications and the Eastern Telegraph Company, from the latter's foundation in 1851.

The book, by historian Hugh Barty-King, tells how the present company name was taken from the uniting of the two competing technologies after wireless had "deprived the cable companies of half their traffic at a stroke".

Having recurrently attracted the opinion that it was about to waste away, overtaken by modern developments, the company has continued to flourish, and tripled its turnover between 1974 and 1978.

Its 1978 income accounted for two per cent of the UK's net invisible earnings.

*Published by Heinemann at £8.50 the book includes over 150 illustrations in its 413 pages.

viewdata
V

First World Conference
& Exhibition on Viewdata,
Videotex & Teletext

26-28 March 1980,
Wembley Conference Centre

The conference will examine the current status and potential of the various viewdata, videotex and teletext systems both in this country and overseas.

This will include discussions on the British Post Office's Prestel system with special sessions describing French, Canadian, U.S. and Japanese systems.

Other streams will deal with various viewdata/teletext applications, electronic publishing, private viewdata systems and teleconferencing.

A special discount is available on all registrations received with fees by 20th February 1980.

The Prestel Show

This will be a highlight of Viewdata/Teletext by the Post Office. It will be a significant part of the post office's launch of Prestel and will include sessions for special interest groups, together with presentations intended for the general public.

The Exhibition

Over 500 exhibitors will show a complete spectrum of equipment and services in the major multimedia areas of TV, video and terminal, as well as representing all the major UK viewdata, teletext, videotex and teleconferencing suppliers and consultants.

For full conference and registration details return coupon to: Computex Online Conference Ltd., Apple House, Northwood Hills, Middlesex, England HA8 1TS. Tel: 08974 28211. Telex: 923498.

Name: _____

Address: _____

Postcode: _____

Signature: _____

on-line

PEOPLE and EVENTS



Honorary treasurer appointed at BCS

CONTROLLER of computer and management services at the London Electricity Board, Richard Paine, has been elected honorary treasurer of the British Computer Society, to succeed Doug Eyelons who resigned on his appointment as director-general of the CSA.

Paine has been involved with computers since 1955 when he was a programmer and analyst, and has been in management since 1980. He has also been an active member of the BCS, having served three spells on council.

He was treasurer of the society from 1961-63 and was a founder member and secretary of the BCS East Anglian branch.

Helen Gibbons has been appointed assistant secretary of the Computer Retailers Association. The association was formed several months ago and membership is open to companies in the computer field which have a significant interest in supplying microcomputers to end users.

David Gordon, formerly general manager of Datapro's Aldershot office and a former manager of BOC Datasolve's Aldershot, Sunbury and Guildford data preparation operations, has now joined Systemsolve as territory manager for the West of England.

Ray Simpson has been appointed a director of Aughton Automation. He remains as director of Aughton Instruments and is now managing the company's operations in Peterlee.

NCR sponsors concert

RICCARDO MUTI, music director and principal conductor of the Philharmonia Orchestra is seen here with William Anderson (left) chairman and chief executive of NCR and Rex Foot, chairman and managing director of NCR (UK) during rehearsals for a concert

which was sponsored by the company. The concert took place at London's Royal Festival Hall and was also broadcast live on BBC Radio 4. It consisted of Verdi's The Seasons with Carl Pini as the violin soloist, and Beethoven's Pastoral Symphony.



IGL prize for student

A PART-TIME computer course brought more than one academic satisfaction to William Craig.

Craig, who took the course at the North East London Polytechnic, gained not only a Higher National Certificate but also the IGL Prize which awarded each year to a student from the Polytechnic Department of Systems Computing who has made the most significant contribution to the final year of the course.

Craig received a certificate and the £40 prize at a ceremony at the Polytechnic's Bala Prodnick.

The awards were presented by David Firnberg, managing director of Urwick-Nunn, former director of the National Computing Centre.

David Wray has been team leader in the communications department, part of application software division of Armit UK. He was previous manager of program area with UCC.

Graham Locke has been moved within Centronics Computer (UK) to its executive. He joined the company last year in sales. Formerly a schoolteacher, Mr. King has become a sales executive.

The switch has a maximum capacity of 64 ports which can be configured in any combination of up to 40 directly connected terminals, up to 16 telex lines, up to 16 lines for connection to other ABCS switches in a network, or to data processing systems or special equipment. Up to four front end processors with four ports each can also be connected, as can up to four

be shown the benefits of better methods, said the organisers, since management rather than technology now determined the future of such concepts as electronic mail and distributed data processing.

As a result of its experience of telecommunications software contracts, including work on System X, Hugh Pushman Associates of Poole, Dorset, decided that one better method for which management was ready was a flexible store and forward message switch, and IMEC saw the launch of its ABCS Automated Business Communications System.

The switch has a maximum capacity of 64 ports which can be configured in any combination of up to 40 directly connected terminals, up to 16 telex lines, up to 16 lines for connection to other ABCS switches in a network, or to data processing systems or special equipment. Up to four front end processors with four ports each can also be connected, as can up to four

As a result of its experience of telecommunications software contracts, including work on System X, Hugh Pushman Associates of Poole, Dorset, decided that one better method for which management was ready was a flexible store and forward message switch, and IMEC saw the launch of its ABCS Automated Business Communications System.

The switch has a maximum capacity of 64 ports which can be configured in any combination of up to 40 directly connected terminals, up to 16 telex lines, up to 16 lines for connection to other ABCS switches in a network, or to data processing systems or special equipment. Up to four front end processors with four ports each can also be connected, as can up to four

As a result of its experience of telecommunications software contracts, including work on System X, Hugh Pushman Associates of Poole, Dorset, decided that one better method for which management was ready was a flexible store and forward message switch, and IMEC saw the launch of its ABCS Automated Business Communications System.

The switch has a maximum capacity of 64 ports which can be configured in any combination of up to 40 directly connected terminals, up to 16 telex lines, up to 16 lines for connection to other ABCS switches in a network, or to data processing systems or special equipment. Up to four front end processors with four ports each can also be connected, as can up to four

As a result of its experience of telecommunications software contracts, including work on System X, Hugh Pushman Associates of Poole, Dorset, decided that one better method for which management was ready was a flexible store and forward message switch, and IMEC saw the launch of its ABCS Automated Business Communications System.

US info management show comes to Europe

REACHING the office environment was the aim of exhibitors at last week's IMEC Information Management Exhibition and Conference at Wembley.

Although the event is a newcomer to Europe, its organisers, Clapp and Poliak, have run it in New York for the past five years under the name Info and they claim to be well placed to cater for visitor needs on a more appropriate basis than a trade association or other organisation that would identify with product groups.

In this case visitor interests were identified from the expectation that the 1980s would see half the working population of the industrial nations engaged in some form of information processing. Management should

PABX extension lines through which any number of terminals can be linked to the system four at a time.

Terminals supported by the system include the Micropad input device for hand written messages. By using the group destination function, hand written messages can be sent to any number of recipients in the same way as telex messages or text from communicating word processors.

By using the Post Office's Midnight Line facility messages can be stored and sent overnight anywhere in the UK at a fixed cost of £220 a year for any number of messages. The messages can go either to a printer or can be held in the mailbox in the switch nearest the recipient.

Facsimile transceivers are also supported and, by using the Fax Comp, compression unit available under licence from Compression Labs in the US, up to 30,000 pages can be stored and then sent at less than a minute per page to a machine in any of the three CCITT speed groups, so long as it has a decompression unit in front of it.

Asclit facsimile conversion is a possible later addition and the company may also develop an interface to support videodata terminals.

Data rates up to 19,200 bps are implemented and up to 3,000 messages of an average 500 characters can be handled in an hour.

Systems without peripherals range from £15,000 to £75,000, while a switch with four telex ports, two eight inch floppy disc drives, three terminals and two printers would cost £25,000. The switches are based on processors from the Computer Automation Naked Mini Series 4.

Another networking system was on display by Tran Telecommunications, the Swindon-based UK subsidiary of the US digital network manufacturer, Tran's M3200 networking system is now installed in the UK for W. H. Smith and the main parts of the system were on the Tran stand: the M3201-2 digital switch and the

M3212 statistical multiplexer.

The Tran product is also based on a Computer Automation Naked Mini Series 4, but it switches data at up to 64 kbps and can therefore handle digitised voice traffic. Tran claims to have been the first manufacturer to integrate all types of traffic into one networking system and managing director Bob Mayo quotes the 1976 Minc-Nora report to the French government as saying there was a danger that the integrated network market was becoming a Tran monopoly.

An M3200 network user is likely to start with a switch and two statistical multiplexers, each with 122 channels, costing a total of £150,000, according to marketing manager Glenn Russell. From then the system is designed for modular expansion, both for increased capacity and for additional functions such as support of X25, SDLC or BSC protocols and conversions between them, as well as modems and test equipment like the XPRT X25 protocol tester, line monitor and terminal simulator.

A major part of the product philosophy is to make the network transparent to user connections across it so that a videodata or digital facsimile link can operate as normal, and simple terminals linked to complex communications software in host computers can not only operate without modification but can also gain some of the flexibility of a packet network by accessing alternative hosts.

For W. H. Smith a function was implemented in the network that allows asynchronous terminals to link to ICL Communications Controllers which use the ICL 7181 synchronous protocol.

A forthcoming facility to be made available in the UK under licence from CTX Cambridge Telecommunications in the US,

allows terminals attached to an IBM 3270 cluster controller to access multiple host computers, which are then addressable from the keyboard, and allows them to connect to an X25 packet switched network.

CTX developed the product about two years ago and was recently bought up by the telecommunications giant GTE and made part of its Telenet packet network subsidiary, which would obviously have a strong interest in helping IBM users to make use of X25 networks.

In the UK the system is likely to sell, under the Tran part

Newcomers at the exhibition

TWO UK exhibition newcomers at IMEC were videodata specialist Jasmin Electronics and the US manufacturer of IBM-compatible systems, Magnuson.

Jasmin, which has been involved with videodata and teletext since its early days, has developed a multi-terminal videodata editing system based on multiple Motorola M6800 microprocessors, and an industrial teletext system. A four-terminal videodata system has been ordered by the Birmingham Post and Mail, which runs the Viewtel

database on the Post Office's Prestel videodata service. The system will run up to 10 terminals.

The industrial teletext system has reached the online trial stage at Heathrow Airport after a three-year contract with the British Airports Authority.

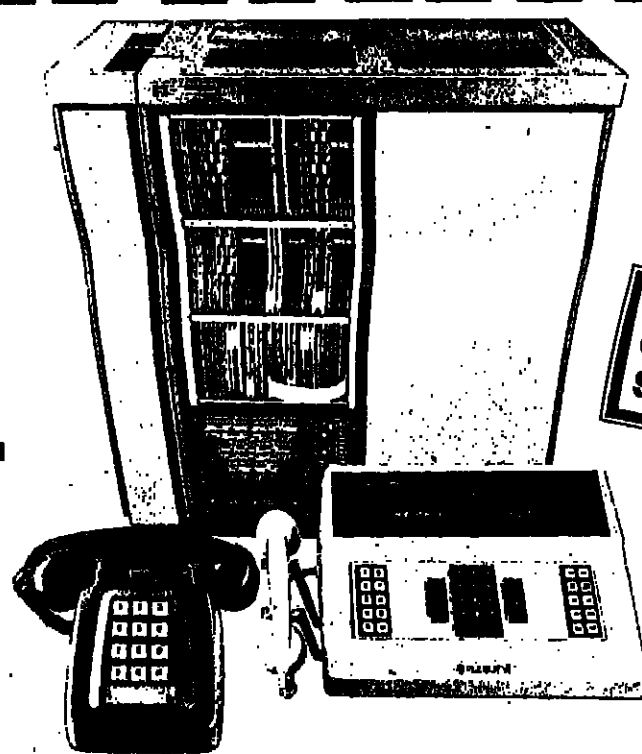
Magnuson showed its M80 series machine. It claims the system has twice the price-performance ratio of the IBM 4300 series and mid-range 360 and 370 machines.

number M3225, at £10,000 plus £500 a month licence for the software to run in the IBM 370X front end processor.

Videodata was also a peripheral interest to Turnkey Software which launched the Lexiboss document retrieval system (see page 5). Managing director Derek Sully said that right after the show the company would get to work on a module for supporting videodata terminals and reformatting for display as videodata pages the text held under the Database management part of the Lexiboss system.

BRITAIN'S

1st DIGITAL PABX



See Plessey PDX at Communications STAND No. 2E14

PLESSEY PDX The Business Telephone NOW FULLY POST OFFICE APPROVED

Plessey launched the first digital PABX business telephone system in the United Kingdom less than two years ago, heralding the start of Britain's all electronic digital communications network future.

Now, Plessey PDX has earned full Post Office Type Approval. This means that exchanges in service have proved the system's ability to match the stringent standards for performance, reliability and maintenance set by the Post Office. More than ninety Plessey PDXs are already installed, and are quickly paying for themselves by controlling ever-increasing telephone costs.

And we're not just talking about simple private exchanges, but of systems which allow you to take full advantage of advanced digital technology throughout your network, linking all your sites. Whatever your requirement, the Plessey PDX in one of its versions - from an exchange up to 800 lines, through satellite and tandem systems to our newly announced 2000 line exchange - will satisfy your needs.

The fact is that one day all exchanges will be like the Plessey PDX - with the capability of handling speech, data, word-processing and facsimile in an integrated processor-controlled system. Right now, your business can benefit from these revolutionary developments with the Plessey PDX - a system that's compact, economical, compatible with all other exchanges and already well-proven in service. Don't you owe it to your business future to find out more about Plessey PDX?

Your communications link with the future.

Plessey Communication Systems

Write for full information to:
Dave Gamson, Major Systems Sales Manager,
Plessey Communication Systems Limited, Boston, Nottingham,
United Kingdom NG8 1L.
Telephone Nottingham (0534) 354222 Telex 37201

IMEC REPORT BY DONALD KENNETT

be shown the benefits of better methods, said the organisers, since management rather than technology now determined the future of such concepts as electronic mail and distributed data processing.

As a result of its experience of telecommunications software contracts, including work on System X, Hugh Pushman Associates of Poole, Dorset, decided that one better method for which management was ready was a flexible store and forward message switch, and IMEC saw the launch of its ABCS Automated Business Communications System.

The switch has a maximum capacity of 64 ports which can be configured in any combination of up to 40 directly connected terminals, up to 16 telex lines, up to 16 lines for connection to other ABCS switches in a network, or to data processing systems or special equipment. Up to four front end processors with four ports each can also be connected, as can up to four

EUROPEAN DATA COMMUNICATIONS STANDARDS

Featuring Architecture, Interfaces, and Protocols for the new public data networks

April 8-9, 1980
Royal Garden Hotel
London, England

Data Communications, a McGraw-Hill magazine, invites data communications analysts, managers, network planners, equipment design or systems engineers, data processing managers and planners, and suppliers of systems or equipment, to a special two-day conference covering:

- Systems Architecture
- Level 2 - Data Link Control Protocols
- Network Characteristics
- Interface Procedures for Start-Stop Circuit Switched Networks: CCITT X.20, X.21
- Interface Procedures for Synchronous Circuit Switched Networks: CCITT X.21, Multiplex Link
- Interface Procedures for Transition of Existing Equipment to Public Data Network operation: CCITT X.21 bis

And a special evening presentation introducing the new packet switching data communications services from the British Post Office.

For more information, complete the coupon below, and send to:
Jan Devry, Conference Co-ordinator
Regent House, 60 King St.
Wickham, Wokingham TW1 3SH, England
Or call 01-491-4951

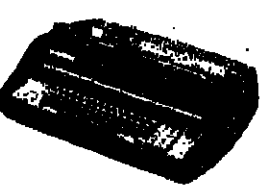
Name _____ Title _____
Company _____
Address _____
Post Code _____
Country _____
Telephone _____

RAIR Terminal choice Choose from the best Best terminals. Best prices Best delivery



DECWRITER IV Desk Top Terminal £795 or £40 per month

New desk-top microprocessor driven terminal operating at 40 baud printing at burst speeds up to 45 cps. Major features include hardware selectable character sizes, horizontal and vertical spacing, justification, and keyboard lock. The keyboard feels like a typewriter and the 9x7 matrix print head produces clear printing.



HYTERM Word Processing Terminals From £1900 or £95 per month

Now range of microprocessor controlled 'daisy-wheel' terminals for word processing applications. Features include proportional spacing, justification, centring, bold printing, etc. plus all standard Hyterm features. Available for metal or plastic daisy wheels giving widest range of type fonts.



SILENT 700 Portable Terminals From £1105 or £36 per month

Range of microprocessor controlled lightweight terminals featuring a fold proven thermal printing technique giving silent printing at 30 cps. Options include built-in acoustic couplers and a non-volatile magnetic bubble memory capable of storing 20K to 80K characters. This feature allows full editing of data prior to transmission.



H1410/1420 VDU's Low Cost Video Terminals £590 or £30 per month

Two new low cost VDUs featuring full 24x80 screen, and additional numeric keypad. Entry characters alternate full and half-width internally, blink or non-display, half and column tabulation, and audible alarm.



M200 High-Speed Matrix Printer From £1995 or £100 per month

Desk top 132 column super-fast 940 cps printer. Major features include: 11 position left margin, 12 character set plus 32 international characters, 12 pin interface, easy-load cartridge ribbon, front or bottom paper support, and a special 100% duty cycle paper up to 16 inch wide.

To RAIN Limited 30-32 Nail Street, London W8H 9PE Telephone 01-494 4884 Telex 354422
Please send me full information on:
Name _____ Position _____
Company _____
Address _____
Telephone Number _____

01-494 4884

COMPANY NEWS

Imports grow faster than exports—Dol

A BIG increase in overseas trade in computer equipment in the third quarter of 1979 compared with the same period a year before is shown in the latest set of Department of Industry statistics. At £215 million exports in the third quarter of 1979 were up 33% while the £270 million import figure represented a 42% increase over the third quarter of 1978.

The Dol statistics tend to be supported by the figures published by IBM UK which show that its 1979 export business at £433 million was 30% up on 1978 (CW, February 21). IBM probably accounts for nearly half of all UK computer equipment exports and imports. ICL exports a lot less than IBM but less of its home sales are imported.

Total sales by the UK hardware manufacturers stood at £250 million in the third quarter of 1979, an increase of 17% over the same period in 1978. The

difference between exports and total sales fell from £75 million to £61 million over the 12 month period.

The Dol statistics also include a dramatically revised import figure for the second quarter of 1979 of £234 million compared with the original figure of £176 million.

The latter figure was considered to be inaccurate at the time it was published because of the strike at the Customs and Excise computer centre at Southend, Essex.

Northampton office

ARROW Computer Systems has opened an office at Northampton to develop sales for its Digital Equipment LSI-11 hardware in the North and Midlands. Heading the new operation will be Ian Castle who was formerly with the big DEC hardware vendor, Fungus Computer Products.

Packs boost business

SOFTWARE package sales provided Westinghouse Management Systems SA with a turnover in Europe and the Middle East of £4.4 million in 1979, a 40% increase on the previous year. But the Westinghouse Electric subsidiary believes that sales would have doubled without the uncertainty created by IBM's announcement of the 4300 series and the Q08/VSE operating system.

Westinghouse achieved 1,080 new package installations in 1979 bringing its total to 3,250, which it claims is more than any other software package marketing organisation in Europe. Sales are expected to increase by 30 to 40% in 1980.

Dividend up again

FOLLOWING a 10% profit growth in the fourth quarter of 1979 (Company News, January 24) Burroughs has raised the quarterly dividend from 55 cents per share to 65 cents. This is the third increase in 12 months.

US \$4,000m giant takes over Ampex

AMPEX, best known in the computer industry as a manufacturer of magnetic peripherals, is being taken over by The Signal Companies Inc, a US holding company.

Although Signal is relatively unknown in the UK, it chalked up about \$4,000 million turnover last year and owns major concerns like the oil company UOP and heavy vehicle manufacturer Mac Trucks.

Signal and Ampex have agreed in principle on the takeover, the terms of which call for the exchange of each Ampex ordinary share for 75% of one Signal share. This offer values Ampex at \$485 million.

According to Signal the non-cyclical nature of Ampex business was a major attraction while Ampex commented that the takeover was definitely not a rescue operation.

Ampex's accounts for the first nine months ended January 26

of its current financial year, show a turnover of \$334 million and net profits of \$27 million compared with \$380 million and \$18 million respectively for the whole of the previous year.

It first made a name for itself as a manufacturer of audio and video recording equipment and is also a big manufacturer of audio and video tape media. But the third side of its business, data and memory products, has become the most important.

In the last financial year ended April 1979, Ampex's data and memory group achieved sales of \$140 million compared with \$131 million for audio and video kit.

The data and memory group is a well established supplier of tape and disc drives and add-on memory and is now putting a lot of effort into promoting its minicomputer systems, the Mini, Midi and Maxi (CW, November 22, 1979).

● Ampex has been found guilty of patent licensing fraud by Judge William Ingram in the US Federal District Court in San Jose, California. The action was taken against Ampex by Memorex and involved a magnetic tape costing patent on which Memorex purchased a licence from Ampex in 1966.

Judge Ingram ordered Ampex to return the \$100,000 licence fee paid by Memorex for the patent. Ampex was also found guilty of misrepresentation to the US patent office on the patent. Judge Ingram also found that Ampex had violated two separate Memorex patents on disc drive arm assemblies and head positioning mechanisms.

GTE hit by Iran troubles

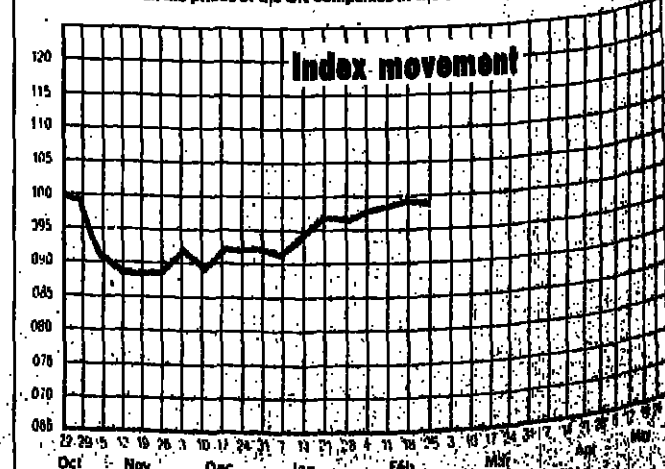
US telecommunications giant General Telephone and Electric has announced an increase in profits of 3.8% to \$645 million in 1979, turnover up by 14% to \$9,980 million.

The company suffered the loss of a communications contract in Iran, but communications products sales showed the largest growth — an increase in turnover of 17%. Telephone operations turned up 13% and consumer electronics by 8%.

CW SHARES TABLE

Date 22/2/80		Index 82.33		New York Stock Exchange							
Pence		London Stock Exchange		Pence		1000		New York Stock Exchange			
1880		Stock		Price		Change		1000		Stock	
High	Low					High	Low			High	Low
318	230	Applied Comp Tech	215	-20	18%	18%	18%	All International	18%	18%	
42	38	Brown Boveri Kaut	20	-1	18%	18%	18%	Amper	18%	18%	
121	121	Burroughs	121	-1	18%	18%	18%	Computer & Data Proc	18%	18%	
75	70	Chubb	72	-5	18%	18%	18%	Burroughs	18%	18%	
120	112	Chubb	112	-8	18%	18%	18%	Computer & Data Proc	18%	18%	
85	80	Chubb	82	-2	18%	18%	18%	Computer & Data Proc	18%	18%	
830	840	De La Rue	810	-20	18%	18%	18%	Digital Equipment	18%	18%	
100	100	East	100	-10	18%	18%	18%	Control Corp	18%	18%	
180	148	East	148	-10	18%	18%	18%	Heaton & Patrick	18%	18%	
300	407	Ferranti	400	-7	18%	18%	18%	IBM	18%	18%	
370	345	General	345	-25	18%	18%	18%	Intertec	18%	18%	
143%	138%	Honeywell	138%	-5%	18%	18%	18%	Kalamazoo	18%	18%	
210	200	IBM	200	-10	18%	18%	18%	Memorex	18%	18%	
138	115	ICI	115	-23	18%	18%	18%	NCR	18%	18%	
22	84	Kalamazoo	84	-1	18%	18%	18%	Perkin-Elmer	18%	18%	
200	200	Kale	200	-2	18%	18%	18%	Pitney Bowes	18%	18%	
120%	121	Memorex	120%	-1%	18%	18%	18%	Rockwell	18%	18%	
270	265	Memorex	265	-5	18%	18%	18%	Schlumberger	18%	18%	
111	102	NCR 4.4 82/88	111	-9	18%	18%	18%	Sperry Rand	18%	18%	
1182%	1132	Perkin-Elmer 4%	1182%	-50%	18%	18%	18%	Zeiss	18%	18%	
228	190	Pitney Bowes	190	-38	18%	18%	18%				
141	108	Pitney Bowes	108	-32	18%	18%	18%				
228	190	Pitney Bowes	190	-38	18%	18%	18%				
84	72	Radi Electronics	72	-12	18%	18%	18%				
271	271	Rockwell	271	-4	18%	18%	18%				
182%	182%	Schlumberger	182%	-4%	18%	18%	18%				
235%	235%	Sperry Rand	235%	-1%	18%	18%	18%				
27	27	Sperry Rand	27	-1	18%	18%	18%				
128%	121%	Zeiss	121%	-7%	18%	18%	18%				

The table shows the closing prices in London and New York at the end of last week. The index is based on the prices of the UK companies in the table.



COMMENT

FIGURES announced by the Equipment Leasing Association last week suggest that business is booming for ELA members in the computer and office equipment sector. Assets of the sector owned by ELA members at the end of 1979 stood at £933 million compared with £560 million a year before.

But it would be unwise to assume from these figures that the computer leasing business is a bed of roses or that it has a great future.

One essential point that needs to be made is that most ELA members that handle computers concern themselves with low risk finance lease where the lessee has to pay back the lessor the total cost of the machine plus interest and expense over the lease period.

Only a handful of ELA members specialise in the much more risky business of writing option leases where the lessee takes the machine for a much shorter period and only pays back part of its cost to the lessor. Operating lease concentrate almost exclusively on medium to large IBM mainframes because they are by far the most type of computer hardware in remarketing and because the amount of money involved makes remarketing worthwhile.

But IBM's announcement of the 4300 series a year ago not only had a serious effect on the remarketing value of leased IBM 370 mainframes (as evidenced by the recent Lloyd's disaster) it also had a very attractive two-year lease which operating lessors will find hard to beat.

Even finance lessors now face a serious threat from a new leasing standard that will require lessors to show leased assets on their accounts. This change will result in capital allowances being transferred to lessees if there is a change in the tax laws.

PRODUCT NOTES

'1,500 times faster' array processor

EURO Electronic Instruments has announced the MAP 6400 which is said to be the only array processor using the large machine standard IBM 64-bit format.

MAP 6400's arithmetic units work in parallel, but this processor also works asynchronously. The parallel and asynchronous operation, in addition to its medium scale inte-

grated TTL implementation, enables MAP 6400 to carry out arithmetic procedures up to 1,500 times faster than a minicomputer working alone, says Euro.

One of the objectives when MAP 6400 was being developed was to make it capable of using the software library for the MAP 200 and MAP 300 systems. Instructions sets are compatible

throughout the three systems.

Included in the software are three-dimensional image processing features such as translation, rotation, zoom, perspective and hidden line resolution which can modify the database before it is transferred to a display.

The control and flexible input/output capabilities of the design are said to allow direct memory output to the appropriate peripheral at rates of up to 36 megabytes per second.

Many of the components of the current hardware were used in the development of MAP 6400. The technology and logic speeds of the arithmetic units, which was widened to 64 bits, are identical to those in MAP 200 and MAP 300.

Euro Electronic Instruments Ltd (CW), 27 Camden Road, London, NW1 1YE. Tel: 01-267 2748.

In-circuit emulator for Intel MCS-48 family

GEC SEMICONDUCTORS has announced the ICE-49 module, which provides in-circuit emulation (ICE) for all systems using any of the Intel MCS-48 family of microcomputers, including the 8049, 8048, 8748, 8039, 8035 and 8021.

The ICE technique is said to overcome problems encountered when testing electronic systems and the test equipment alters the operating characteristics of the system and distorts measurements.

The problem is solved with an ICE by monitoring in real time what is happening within the system and storing this information for later analysis. The ICE-49 comprises two circuit boards which reside within the

Intel microcomputer development system.

Using ICE-49, the designer can execute prototype software either continuously or in a single step mode. Break points which allow the user to stop emulation are available on the detection of a wide variety of conditions within the system. The trace capability allows a detailed history of the program execution prior to the break to be examined.

The designer can use ICE-49 to examine and alter MCS-48 registers, memory and flag values and examine pin and port values in a real time environment.

GEC Semiconductors Ltd (CW), East Lane, Wembley, HA9 7PP. Tel: 01-904 9303.

13.5 litres of air/second from slimline fan

A SLIMLINE centrifugal fan from ETRI, the Model 583-CBA-200, uses sleeve bearings to give a low noise level when running. Designed for cooling electronic equipment, business machines and other applications, the fan has a thickness of 38mm and can deliver 13.5 litres of air per second under normal 50Hz operation in free air conditions and 6 litres per second at a pressure of 11.5mm static water gauge.

The fan uses an integral shaded-pole motor designed and manufactured by ETRI and has a nominal speed of 2,550 revolutions per minute at 50Hz and 2,500 revolutions per minute at 60Hz. Maximum static pressure is 16mm of water at 60Hz and noise level is 48.5 dBA.

The main body of the fan is a zinc-based alloy and the impeller is made of thermoplastic. The sleeve bearings are lubricated for life.

Overall measurements of the fan are 127.0 x 126.2 x 38mm and mounting is by three fixing holes. Electrical connection can be by solder or with a plug.

ETRI Ltd (CW), 3 Guildford Road, Horsham, RH12 3JT. Tel: 0403 68797.

Scientific calculators

THREE advanced programmable pocket calculators with continuous memory, including what is said to be the first scientific model with preprogrammed "solve" and "integrate" functions, have been introduced by Hewlett-Packard.

The HP-34C is said to be the most powerful programmable scientific model in HP's low cost E-series.

It has 20 data registers which are automatically converted to program lines as needed; or up to 210 program lines with a programming capacity of up to four keystrokes per line or about 370 typical program; and full program editing capability. It costs £85.50 including VAT.

The HP-33C is a programmable scientific calculator with continuous memory and all the features of the HP-33E. It costs £75.50 including VAT.

The HP-38C is a continuous memory version of the HP-33E. HP's financial calculator. It costs £85.50 including VAT.

Continuous memory is said by HP to save time and reduces the

chances of error by permitting indefinite storage of frequently used programs and conversion constants.

Hewlett-Packard Ltd (CW), King Street Lane, Wincoburn, RG11 5AR. Tel: 0734 784774.

Acoustic cover

T. MAT Engineering, the Loughborough-based noise control company, has developed an acoustic cover to suit the T.15 telex machine which has received Post Office approval.

The body of the cover is vacuum formed using grey leather grained ABS plastic. The inside is lined with one of T. Mat's noise absorbent faced foams and the front perspex cover has been developed to give a minimum of distortion for the operator.

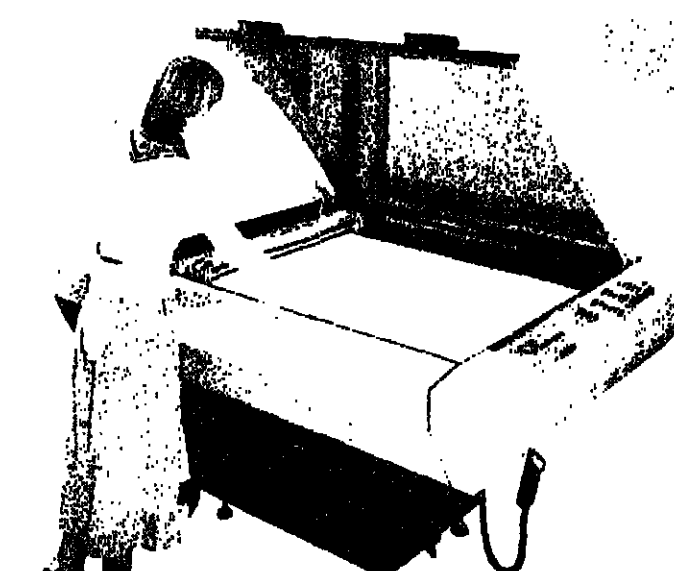
T. Mat Engineering Ltd (CW), Sullivan Way, Loughborough, LE11 0QS. Tel: 0509 217171.

Safety cover

COMPUTER Instrumentation has introduced a safety cover for its Series 4/70 Intelligent Flat bed graphics plotters to protect the operator and to meet international safety standards.

The feature enables direct purchase of plotters by public authorities and the defence sector for computer aided design work and extends the plotters to a safe operation with non-specialist workers.

Computer Instrumentation Ltd (CW), School Lane, Chandler's Ford, Eastleigh, Hampshire. Tel: 04215 66321.



CIL's safety cover for its Series 4/70 plotters.

Universal PROM programmer from Elex

ELEX announces its E-H 4A universal PROM programmer which is a single instrument without adaptors or plug-ins that provides programming editing and emulation for all NMOS EPROMs including those still under development.

The E-H 4A has an internal RAM to permit program editing and can be connected to the user's circuit for emulation. Master PROMs can be

copied with amendments.

It has an in-built display to allow PROMs to be read. It is also fitted with an RS 232C interface to allow PROM contents to be dumped and to allow remote control of the E-H 4A from an external data source.

Elex Ltd (CW), Crossway House, Bracknell, RG12 1DA. Tel: 0344 32828.



Whatever the industry — electronics have a role. Micro-processors are contributing a whole new spectrum of technology destined to influence every aspect of life in the future, from horse racing to space research.

In today's economic climate, now more than ever, LABHIRING must be the answer to equipment acquisition — without financial burdens. Send now for the LABHIRE '80 catalogue which is full of state-of-the-art instruments and systems, all available immediately from three U.K. locations.

Another aid to industry from Labhire, Europe's leading rental organisation. The MT 6000 microcomputer terminal is produced at the Uxbridge factory of Control Systems Ltd., utilising a microprocessor development system on rental from Labhire. The MT 6000 is a microcomputer terminal.

Everybody's Labhiring

Labhire LABHIRE

Contact
Steve Bass

market place

FOR SALE
Dataprinter

For
Advertising Rates
PHONE 01-261 8757

SK DEC SYSTEMS FAST!
COMPUTER SYSTEMS LTD

- PDP 11 SYSTEMS IN STOCK
- FULL RANGE OF SOFTWARE
- PER CALL OR CONTRACT MAINTENANCE AVAILABLE
- WIDE RANGE OF DEC COMPATIBLES

YORK HOUSE, STEVENAGE ROAD
HITCHIN, HERTFORDSHIRE, SG4 9DY

south north telex
0462-31116 0706-58446 826580

digital systems and
compatibles in stock

PDP 11/04 /34 /60 /70
COMPUTER SYSTEMS
COMPETITIVE
DELIVERY &
PRICES

FAST DEC!

FROM
Systek

HR House, High Road,
North Finchley, London N12 0AZ
Tel: 01-349 2911 Telex: 28227

**DISC DRIVES
FOR SALE**

2 x Dec. — RPO3 Disc Drives, fully maintained by Digital on full commercial contract.

PRICE: £5,000

Contact: Mr. D. A. Williams

Powell Duffryn Computer Services, Faraday Road,
Danes Hill, Basingstoke, Hants. Tel: 0256 51821

N Nelson Computer Services Ltd
ST. JOHN'S COURT, BACUP ROAD, HAWTHORSTALL, LANCAS 101
New and Refurbished

Card Equipment

HAND PUNCHES, REFINISHED
IBM 100 100 100 100
ICL 72 PRINT PUNCHES
UNIVAC 1701-1710 VP/VIP
ICL & IBM INTERFACES
ICL & IBM SORTERS
ICL & IBM REPRODUCERS
DECISION DATA READER PUNCH
ON-LINE TTY IBM 360/370
CMC DEC MSD, etc.

Forms Handling

INKSTERS
RECYCLATORS
GUILLOTINES
SHEDDERS

Data Storage

TAPES, DISC & CARD CATALOGS
PRINTOUT STORAGE
FLOPPY DISC STORAGE

Media

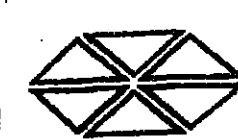
MINI & FLOPPY DISCS
TOP & FRONT LOAD CARTRIDGES
DISC PACKS
DATA MODULES
MAGNETIC TAPE
PAPER TAPE
TELEPRINTER ROLLS

Plus, Plus, Plus

DATA BINDERS, PINE SAGE
PRINTERS, PUNCHING PUNCHES,
DESKS, A/S R 30 TELETYPE
DECISION DATA PUNCH
ICL C/P, ICL C/P, ICL C/P
PC and MCR

**BUY — SELL — LEASE — RENT —
MAINTAIN**

Phone: 07062-29125 5 Lines



HEXAGON
computer services

BUSINESS SYSTEMS
SOFTWARE PACKAGES
FACILITIES MANAGEMENT
RECRUITMENT ADVERTISING
CONTRACT STAFF SUPPORT
COMPUTER SECURITY
BUSINESS SYSTEMS

HEXAGON HOUSE
145 WARDOUR ST
LONDON W1A 2UE

01-439 3671

PDP-11/40 FOR SALE

WITH:

- 256 KB Memory
- RP04 88 M-Byte Disk Drive
- 2 x TU10 Mag Tape Drives
- 3 x RK05 2.4 M-Byte Disk Drives
- DZ11 16 line Multiplexor — 6 x DL11s
- CTS 500 Software Licence (Category A)

All equipment 100% DEC & DEC maintained

£42,000

Tel: EGHAM (0784) 37411

USED CALCOMP PLOTTING SYSTEMS

Variety of used drum plotters and off-line controllers for sale at following sample prices —

Model 683	(30" wide, 1 pen)	£2,250*
Model 938	(34" wide, 3 pens)	£2,000-£3,000
Model 836	(34" wide, 1 pen)	£2,000
Model 1036	(34" wide, 3 pens)	£4,500
7 track	886/800 bpi controllers	£2,000-£5,000
8 track	800 bpi controllers	£2,000

All systems in good working order — mainly returned rentals and ex demonstration systems. Full maintenance contracts available.

For full details contact: Don Crowle, 0344-50211

*Fully refurbished

FOR SALE

ICL PERIPHERAL EQUIPMENT

13-type 718173 remote VDU's. Unused. Immediately available eligible for ICL maintenance. £1,500 each.
SIMKISS COMPUTER SERVICES, 0728-6348

**IBM 129, 029, 026
PRINTING PUNCHES**

- * All fully refurbished
- * Free warranty
- * Guaranteed maintenance
- * Various code options available
- * Immediate delivery

Tel: 0288 710282

C.D.L. COMMERCIAL DATA LTD., Darnley Road, Rensselaer Heath, Billesley, Essex

**TWIN ICL SYSTEM 4
AVAILABLE MID-1980**

FOR SALE

EQUIPMENT OFFERED:

- 2 x 4-52 CPU (256 KB EACH)
- 2 x BD560 CONTROLLERS
- 6 x BD560 DUAL ACCESS DRIVES
- 2 x CARD READERS (1200 cpm)
- 1 x PAPER TAPE READER (1500 cpm)

For further details contact:

The Advertiser
50 Hill Court
St. John's Avenue
Putney Hill, LONDON, SW17

**Qume
CIBER
digital
OKI**

Rohon Computing
Tel: Southern 02926 11485

Computers Bought and
Sold

**EOB
LIMITED**

Tel: 0783 293818
Telex: 537783

**DIBOL
PROGRAMMERS**

available for
Contract or Bespoke
Software Development

Contact:
01-398 8445

FOR SALE

DT300 DATATERM 3 OMR
+ Autolead Unit
+ 800 BPI NRZ Tape Unit

OFFERS INVITED

For further details please telephone Mr. D. Carey on
0203 26565 ext 2856

Offers, in writing, must be received by 10th March 1980

City Treasurer
Coventry City Council
Council House, Coventry CV1 5RQ
Ref. T/C5.5.2/JMR

FOR SALE

Two Pentic D3300 Diablo Com-
patible Disc Drives. Factory
reconditioned.

£2200 each.
0282 726814

WANTED

To purchase, all user IBM, ICL
computers.

J. & M. COMPUTERS
The Stables, Plains Road
Great Totham, Essex
Tel. Maldon
(0621) 892333

FOR SALE

Burster-Decollator with side
and centre cutters, needs
some attention. Contact G.
Lovejoy, for further details
on
Bracknell 26767

Peak Computing Limited
101 CLAPHAM ROAD, LONDON S.W.11
Telephone No: 01-382 9612

RPG

Software & Data
Preparation



FOR SALE

IBM 370/135

Phone Lynn Stewart

on 0532 32046

**COMPUTER FACTORS
(SALES) LTD.**
0203-88318

AVAILABLE FOR SALE

VARIAN V77-600 MEDIUM SYSTEM
UNIVAC BC7
VENTEK 2200-16K AND PERIPHERALS
PHILIPS P320/P410 + HARD DISK
OLIVETTI PCS 3030
IBM SYSTEMS 328/NCR 8200
BURROUGHS TC3500, L9000, L9900
AND ALL PERIPHERALS

EQUIPMENT REQUIRED:

BURROUGHS B80, B800, B730s

Contact: ALISTAIR DAVIDSON or
BARBARA BEANLAND for details

**CONTRACT
or
PERMANENT**

We are the Specialists!
ANALYSTS PROGRAMMERS OPERATORS
VDU/KEY PUNCH OPS DATA CONTROLLERS

FOCUS

Computer Services Limited
01-487 5781
(exp. day)

FOR SALE

IBM 360/44

CPU Model 2044 G, memory 128 Kbyte. 2
disk storage drives (2Mbyte capacity total and
70 ms average seek). Data rate 90 Kbyte/sec.
Data Control Unit, model 1827.

For further information please contact:

CERN — STORES/SALVAGE SERVICE
CH — 1211 GENEVA 23

OR phone

for technical information: M. H. OVERAS
(022) 832667

for commercial information: M. F. SPYSE
(022) 832180

OR Telex 23698 CH-CERNLAB

**20
00**

Upgrading? Holidays?
Downgrading? Peak Work Loads?
New Systems? Weekend Overtime?
Program Maint.? Sickmess?

01
-637
7584

Systems — Programming — Operations

When you need Contract people,
Computer Two Thousand will
make your life easier.

**REACH THE COMPUTER
INDUSTRY
THE EASY WAY**

The most economic and efficient way to reach over
92,000 computer people in this country is by
direct advertising. Why not place an ad in the
C.W.?

MARKET PLACE

For details of rates and dates
Ring: Kenta White on 01-261 8293

[Handwritten signature]



K-tel International (UK) Ltd.

For:

Key to Diskette
Data Preparation Service
Ring 01-992 8000
K-tel D.P. Dept.

"GIVE US THE
tools, food, clothing, heating — all cost
money, but all are involved in caring for
children — and much more.
If you give us — not tools — but your
computer waste, we can do the job of
caring for over 5,000 children who
need love, care and security."

CAN YOU HELP?
Please contact:
Paul Morrison
National Children's Home
88 Highbury Park
London, N5 1UP
01-224 2033
we'll do the job

FOR SALE

**6 CODE
PAPER TAPE
PUNCH/VERIFIERS**

Offers are invited for whole or part
of the above equipment which is
available immediately.

Please contact: E. W. Miller
at Water & Water Authority
Barnaby, Bridgehead (0442-
59955)

COMPUTERMARKET 80
PREVIEWComputer Mountain
goes to
Mohammed

AS the excitement and merriment of the start of a new decade fade away, computer companies are turning once again to showing off and selling their wares. First in line this year is Computermarket 80, the seventh exhibition of its kind, although it was originally called Computer Caravan.

The exhibition follows a "mountain coming to Mohammed" routine by touring a number of city centres in a matter of weeks. Computermarket 80 begins life on March 4 in Birmingham and ends in London (via Manchester and Glasgow) about three weeks later on March 27.

Response to the multi-venue idea is said to be high and the organisers, Couchmead, have had to set up a special exhibitor waiting list for each location.

Traditionally, three types of visitor have attended the exhibition — data processing

managers, OEM/systems builders and first-time users and DIY computer enthusiasts.

Among the word processing systems on show at Computermarket 80 will be the Comma Writer. This has been developed in the UK by Comma Computers, the systems and terminal distributor based near Brentwood, Essex. Using software developed in conjunction with an unnamed UK university, the Comma Writer is based on the North Star Horizon microcomputer and has a twin floppy disc drive and a high resolution VDU and Diablo printer. By adding standard software packages the company says that the Comma Writer can be extended beyond just word processing work to handle payroll, sales invoicing, stock control and other business applications.

Priced at £6,950 the system comes with a one-year hardware and software maintenance agreement and full operator training. Equinox Computer Systems will exhibit a range of commercial, scientific and educational microsystems which includes a word processor with a price tag of about £6,000.

A desk-top microsystem, the Mael 5100 is one of two launches to be made by Computer Ancillaries Ltd. The Mael 5100 is a 16-bit machine designed for business applications and it can be supplied with compilers to handle Commercial Fortran, Commercial Basic, Fortran, Cobol, RPG 2 and Pascal. Floppy disc storage is expandable up to 2.7 megabytes, and for a 64K machine the cost will be about £9,700. For an extra £1,300 a printer and a range of application packages are included.

CAL will also show, for the first time, a range of software developed by CAP for use on the Durango desk-top micro.

Rair will exhibit its Black Box II microsystem based on the Intel 8085A. It comes with up to 64K of RAM and features a multi-user operating system that can handle 16 terminals simultaneously. As an option, a hard disc system giving up to 10

WHERE AND WHEN
TO SEE
THE SHOW...

Birmingham: March 4 to 6
Albany Hotel, Smallbrook, Queenway.
Manchester: March 11 to 13
New Century Hall, Corporation Street.
Glasgow: March 18 to 20
Albany Hotel, Bothwell Street.
London: March 26 to 27
West Centre Hotel, Leam Road, SW6.

megabytes of storage is available. The Black Box II supports Cobol, Fortran and Basic.

Making its first appearance at a Computermarket exhibition will be Hamilton Rentals Ltd. It will demonstrate the Dig Equipment PDT 150 microcomputer, CAP-PP's MicroCobol software packages. Among applications covered by the packages are sales and ledger and purchase applications.

Hamilton is to show a range of computer equipment.

Computer
Ad contest

BEING run in conjunction with Computermarket 80 is a competition to find the best Computer Advertisement of the Year, the proceeds of which will go to the British Computer Society's Special Group for the Disabled. Among the competition judges will be P. Kavanagh, editor of Computer Weekly.

manufacturers such as Hewlett-Packard, Digital Equipment Corporation, Tektronix and Texas Instruments.

From its office products, Hamilton will exhibit a Dig Equipment WD80 — a one or two terminal system. This comes with either two or four diskette drives and a 500 words per minute Diablo printer.

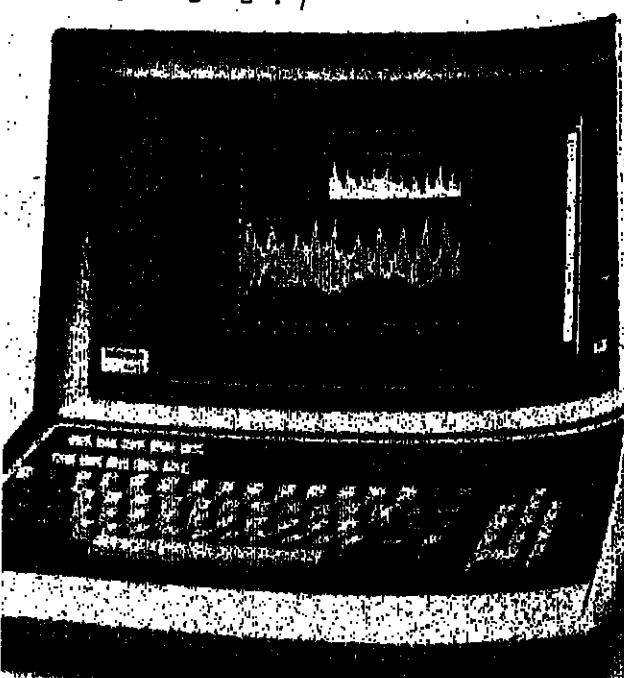
For those looking for solutions for their Commodore Pet, Computers of Ealing will demonstrate a range of stock control, word processing and complete record accounting packages. Prices start at £150.

A Pet-based income record accounting system, also to be launched at a price of £3,500.

Rostronics is to exhibit its Micromation Z-Plus business system based on the Zilog micro.

Two new graphic systems

● Turn to page 21



The new Tektronix 4052 Desktop Graphics Computing System. Tektronix developed processor that provides high speed graphics and graphics capabilities. It has 32K of memory as standard and can be expanded up to 64K.

New models make debut
at the exhibition

● From page 20

have been announced by Tektronix. These are the 4052 and 4054 Desktop Graphics Computing Systems, and both offer high data processing speeds and special flicker-free screens. An internal magnetic tape drive holds up to 300K of data and program storage while the standard 32K of RAM can be increased to 64K.

The Tektronix 4052 comes with an 11-inch screen while the 4054 has a 19-inch screen.

An exclusive UK distribution agreement has been signed between Comma Computers and the manufacturers of the Princeton 8500 M range of micro-based graphics terminals. The Princeton 8500 M range features high resolution intelligent graphics terminals which sell for about £15,000 and according to Comma they will complement the Sigma range of graphics systems that it already handles.

Another exclusive distribution agreement that Comma has signed is for a new micro-based plotter from Brown Boveri. Called the Servogor 281,

the plotter costs £2,750 and measures 18 inches by 17 inches and is only six inches deep.

Varying line colours and thicknesses can be achieved via the eight programmable pens on the plotter, while an optional feature is a programmable paper feed for handling continuous stationery.

Among the computer peripherals to be exhibited by Lynwood is the Beta VDU which has half-intensity, blinking and underline and reverse video facilities.

A new VDU will be introduced at Computermarket by Pragma. It is called the Visual 200 and has a screen which can be tilted from 10 degrees to 15 degrees. The Visual 200 can also emulate the Hazeltine 1500, the ADDS 520, the Lear Siegler ADM-3A and the DEC VT-52 terminals. It costs £754.40 unbuffered and £823.40 buffered.

For £495 you will be able to buy a terminal called the Model 7000 from Newbury Laboratories. The terminal is Teletype compatible and has a 80 characters by 24 line green

phosphor screen. A new printer, the Model 8300, will also be on the stand. This has a 2K buffer as standard and a print speed of 125 cps. Single end user prices start at £100.

Adding to its 400 series of terminals, Harwoods Business Systems will exhibit two new models. One is the Teletaper, a Telex compatible VDU with 48K of memory and basic text editing facilities. The other is a VDU equivalent to the VT100 which has smooth scrolling and 132 print positions.

Highlight of the Anadex stand at Computermarket will be its new DP-9500 line printer which has up to 220 column print positions and costs just under £800 for the one off, end user price.

Among the range of equipment available for the DIY computer enthusiast is a long-awaited dual minifloppy disc system from Nascom Microcomputers featuring double-sided, double-density disc drives.



Two new peripherals will be on show at Computermarket 80 from Newbury Laboratories: the Model 7000 VDU and the Model 8300 matrix printer. Our picture shows the Model 7000 which is Teletype compatible and costs £495.

THE
COMPUTER
CARAVAN
IS HERE!

Are you one of these?

- Considering your first computer
- Growing out of your present one
- Wishing to complement your existing main-frame

Then a Distributed Data Processing system is the answer. Whatever your size. Now, we bring you the opportunity to see a Data 100 Distributed Data Processing system in action. Right now. In the quiet intimacy of private suites.

Our people will be on hand, from 9 to 5.30, to talk over your requirements. A solution could be available for as little as £275 per month, including maintenance.

They'll also outline the support you'll get from our 60 nationwide centres. Typically less than 2 hours away.

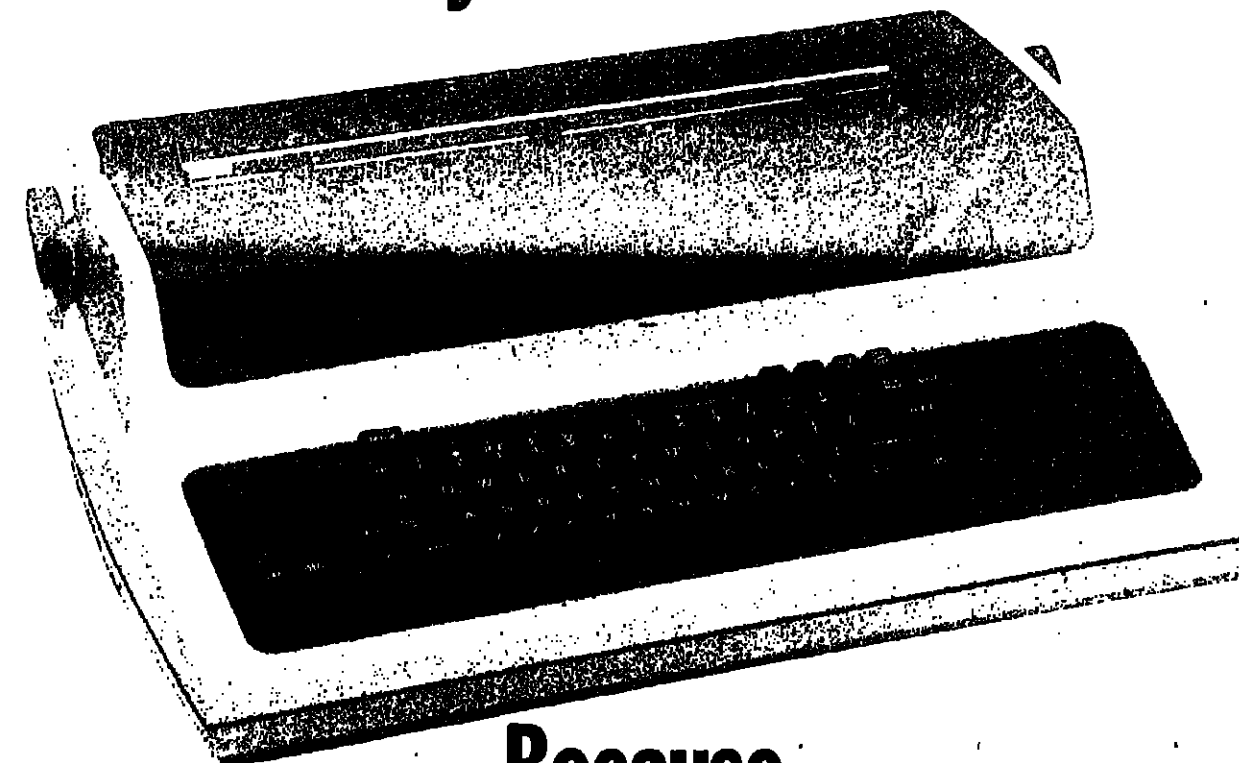
What else do we offer? The strength of a £1,000-million organisation; the expertise gained from over 800 installations in the U.K. alone; the supply of business forms and d.p. furniture.

In short, total solutions for today's business community. From —

DATA 100
SYSTEMS LIMITED
A NORTHERN TELECOM COMPANY
Data 100 Systems Ltd.
Data 100 House,
Arden Grove, Harpenden,
Herts AL5 4UD.
Tel: Harpenden 63161.
Telex: 825234.

For further information, please contact David Longley at Harpenden 63161.

TURN TO
DATA 100.

Why come to Hamilton
for your DEC LA34?

Because

Rental price from £49 per month
Includes full on-site maintenance.
Rates available for 1, 3, 6 or 12 months with or without purchase options.

Sale price £790
Price includes full on-site warranty.

Availability
Immediate delivery nationwide.

Service Group
Maintenance Agreements provide fast on-site service throughout the UK.

HAMILTON
Hamilton Rentals Limited, Station House, Neasden Lane, London NW10 1PH

London 01-480 8900
Birmingham 021-236 3661
Manchester 061-848 8338/8434
Central Scotland 0501-43182
Aberdeen 0224-25301

Paris
Dusseldorf
Toronto
New York

ADVANCED FILE DESIGN—Part 4

by Owen Hanson and Norman Revell

Addressing concepts for direct files

STOCHASTICALLY organised files can be used to answer occasional inquiries using either a binary or statistically based search technique, see Part 2. The number of inquiries that can be handled in this way is very limited, however, as it will take 250-400 milliseconds just to locate the required record.

Reference times can be cut to about a tenth of this figure by using a well-designed direct file. The term direct implies that, when a particular record is required, it is possible to retrieve it without scanning a large part of the file during the search. This means that the record key, which will be known from the inquiry, is related in some way to the record address.

The simplest way to arrange for this relationship is to store records in addresses that are directly linked to their keys, eg:

ADDRESS = KEY

ADDRESS = KEY + CONSTANT

ADDRESS = (KEY + CONSTANT) / BLOCKING FACTOR

There are many variations of this type of equation, due to factors such as differing disc starting addresses, blocking of records or form of keys. They all rely on one essential prerequisite, which is that the key sequence is unbroken, or at least nearly so.

Because a simple relationship

BASIC FILE DESIGN

A new impression of Basic File Design will be available in March and copies may then be ordered from the General Sales Manager, IPC Electrical and Electronic Press Ltd, Dorset House, Stamford Street, London SE1 9LU. Price £1.90 each including postage.

provides a unique address for each record or block of records, the user may wish to preserve it even if this means that some addresses are unoccupied. A file stored in this way is called self-indexing. Even if the key sequence was originally unbroken, gaps occur naturally when stock lines are discontinued, customers go out of business or employees leave.

Preservation of the relationship by leaving up to half the potential storage space unoccupied may be justified; the file designer will be guided by the availability of disc storage and the importance of maximum inquiry throughput. At some point it will not be possible to waste more storage space as the key sequence deteriorates, and a different solution has to be found.

If the gaps are large but relatively few in number, a table can be provided that will subtract appropriate values from the keys, and allow all addresses to be used. In a simple case the keys might follow the sequence

0001-0103
0121-0244
0443-0480

and so on. If addresses were available from disc sector 000070, and each sector could hold a single record, the address of a record would be determined as shown in Table 1.

Such an allocation arrangement is very useful for cases in which runs of keys occur naturally. However, it involves both

the provision of comparison values, and a lengthy analysis of each input key. In principle it could always be arranged, but in practice the technique is limited by availability of storage space or the need to take account of constant changes in key sequence. Thus it is only useful if the file is relatively stable and gaps in the key sequence are few, that is, hundreds at the most.

Whenever it is possible to link the address and key of a record directly and so provide a self-indexing file, both direct and sequential reference is possible without any waste of time. However, some key sequences have too many gaps to be handled in this way, or are unsuitable

IF KEY < 103, ADDRESS = KEY + 869
IF 121 < KEY < 244, ADDRESS = KEY + 882
IF 443 < KEY < 480, ADDRESS = KEY + 853

Table 1. Determining the address of a record in a disc sector.

because they contain alphabetic or special characters. In this case some other method of linking the key and address is needed.

Keys may be very wide in range, and the objective is to fit them into a set of addresses that provides enough space for all the records, without very many empty positions (10% to 20% may be acceptable). The process is shown in Diagram 1. Two approaches to this are possible;

the first is to spread the records over the available addresses at random. The second is to use any order, usually groups or runs of keys to allocate them more effectively. The allocation calculation is called an algorithm. Many types of algorithm have been investigated but we shall only look at the two most useful techniques here.

Truly random allocation of records is often achieved by squaring the key, or a part of it, and using some digits from the square (usually the centre digits) as an address. The figure will usually have to be adjusted in some way, as it will be in the form 2^n or 10^n , while the required address range might be any size.

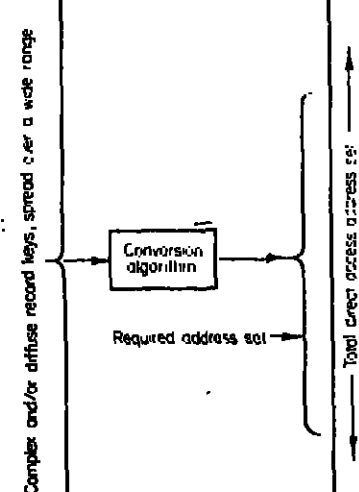


Diagram 1. Fitting keys into a set of addresses without leaving too many empty positions.

and subsequent records allocated to this address will have to be stored elsewhere. They are called synonyms.

It is virtually impossible to find an algorithm that does not produce synonyms. Helsing² quotes the probability of finding such an algorithm, in allocating 4,000 records to 5,000 addresses, as 1 in 10^{12000} . However, sometimes the order in the keys (usually runs of records) allow

us to reduce the number of addresses below the 'random' percentage.

Division of the key by a prime number or an odd number close to 10^n (eg, not 100001), and use of the remainder as an address, often give a very good distribution of records. The advantage of this method is that runs of keys will produce remainders that do not lead to synonyms; they differ by one from each other. However, if two separate runs overlap, large number synonyms can be caused. This will be discussed in detail in Part 5.

The technique also allows a number of addresses allocated to be 'fitted' easily to the number of records by a suitable choice of divisor; division by N will produce remainders in the range 0-(N-1), and the only further adjustment needed is to add a constant if the available address range does not start at address 0.

These two techniques are widely used, and give good results. However, synonyms cause wasted time, as the address calculated leads to the home address, and a further search is needed to find the required record. Thus the designer aims to reduce both number and the effect of synonyms to a minimum. The ways in which this is done will be discussed in future parts.

REFERENCES

1. Structured Information File: Kaimann, publ. by IBC Publishing Corporation, 1975.
2. Note on Random Address Techniques, W. P. Helsing, Systems Journal, Vol 1, 1963, 112-118.
3. File Organisation and Accessing, Werner Buchholz, IBM Systems Journal Vol 2, 1957, 465-111.

YOU HAVE SEEN THE TRAILER HERE IS THE MAIN FEATURE

'Littlewoods Organisation Limited saved a great many hours of work through converting to Ekonomailer,' say the Wages Office at Littlewoods, Liverpool.

You don't have to be Littlewoods to make it profitable using Ekonomailer; all companies and authorities which use computer processing should be aware of that. Ekonomailer can be used for: invoices, statements, salaries, reminders, direct mailing shots and so on. Ekonomailer is a system which eliminates time consuming and expensive operations such as: folding, inserting, sealing, franking, etc. A system which is ready for fast distribution of information from the computer.

Ekonomailer is a pre-sealed continuous envelope with printed inserts. The system will reduce your post handling to a minimum. When you receive the forms, just print out the information your customer needs and mail the envelopes.

The savings in converting to Ekonomailer depend on how many and what kind of processes you are able to convert. Ekonomailer eliminates time consuming and expensive operations and makes distribution faster after printing.

We would like to inform you about all this and much more by demonstrating with samples and case histories. You will then easily understand the concept of Ekonomailer.

EKONOMAILERS

Follow up the idea of functional and advanced computerising. I am very interested in saving my company time and money. Please contact me.

NAME

COMPANY

ADDRESS

CONTINUOUS DATAPRINT
49 JORDAN STREET, LIVERPOOL 1
TEL 051-708 8741



Picture taken of the front of Littlewoods Head Office.

Appointments

THE NEWSPAPER COMPUTER PEOPLE RELY ON

Appointments

The Informatics Grand Tour.

I understand you can travel straight up into management positions

Informatics is worldwide, the locations are limitless

Anywhere in the USA. Anywhere in the world once you're back to UK

Dependant relocation paid in full. I guess I'll bring my wife.

I hope they send me to Florida

We'll be trained to a fare-thee-well on IBM/370 data based and on-line systems



Grand indeed, salaries up to \$35,000 and super bonuses after 18 months

Paid holidays, paid medical and life insurance. They literally fringe you to the hilt

Generous cash allowances in addition to airfare

Alaska is nice if you like all that snow

I'd like to try Detroit Why?

Travel with Informatics is so enriching!

Informatics will be interviewing in London and Manchester for positions in the USA during the week of March 18, 1980. To arrange a confidential expense paid interview send resume immediately or telephone Ms Mary Casillo at our London office (01-405 8546). Reverse charges accepted.

Informatics Inc

Africa House
64-78 Kingsway
London WC2B 6AL
01-405 8546

Hissing Sid contracts Project Recruitment

WHAT FOR?

To apply for one of our career opportunities OF COURSE!

We require

the Captain Beakies, Timid Toads, Arty Owls and Batty Bats of the computer world for other vacancies in the Midlands and South-West.

If you have something to offer besides knowledge of the Forest

APPLY NOW

Immediate interviews for good mainframe Programmers and Analysts

R Project Recruitment Limited
10, 11 and 12, The Quadrant
South Ruislip, Middx

contact PETER KEAY
01-822 6611

Registered Office
10th Floor
Scala House
Bullway, Garsington Road
Oxford OX4 1JF
Tel: 021 631 5038 x 9

ilea INNER LONDON EDUCATION AUTHORITY

Inspector for Computer Education

Salary Range: £10,799 - £11,858
(Inclusive of London weighting)

Applications are invited for the post of Inspector. The main but not exclusive responsibility will be the development of computer education in primary and secondary schools. There will be particular emphasis on the growth of the use of microcomputers across the curriculum and related in-service training. Applicants should have had substantial experience in these areas and will be expected to assist the staff inspector for computer education on all aspects of the work.

Application forms and further details may be obtained from the Education Office (EO/Estab 7B), Room 387, The County Hall, London SE1 7PB (Please enclose a stamped addressed envelope). Completed forms to be returned by 18 March 1980.

SYSTEMS ANALYST
c. £7,000

E. Gomme Limited, manufacturers of G-Plan furniture at three locations in the United Kingdom, require a Systems Analyst to join the staff, friendly data processing team at the High Wycombe headquarters, where we use an IBM 370/125 to process a wide range of applications.

Applicants should ideally be aged between 25 and 35, with a programming background and two years' systems experience. We can offer you an important role in the design, implementation and maintenance of a wide variety of both batch and T.P. applications.

The Company offers excellent conditions of service and a salary, will be negotiable in the region of £7,000. Generous assistance with re-location expenses will be given, where appropriate.

Write to: A. Sampson
Company Personnel Manager
E. Gomme Limited
Spring Gardens, High Wycombe, Bucks.

JBA

SOFTWARE DESIGN IN CANADA

Salaries \$22,500 - \$30,000 + relocation

Our client is about to build a team of Software Design professionals in Canada, and is willing to consider applications from British candidates who wish to spend 12-24 months on assignment in Montreal. Full relocation will be provided, plus re-establishment and integration back to the U.K. division of the company at the project end. Alternatively, personnel may elect to consider the European or U.S.A. divisions where equally diverse and interesting projects are being established.

Discipline spread required covers such things as: Communications, Word Processing, Viewdata and associated areas. A minimum of 4 years software development experience is required (a good Comp. Sci. degree counts as 1 yr.), with extensive design experience being of paramount importance.

Contact: Andy Wright or Mike Creamer

Sales Executives

Leeds Based

Earnings c.£14K + Car

A well known computer manufacturer is seeking two SALES EXECUTIVES to sell small business systems (I/V and S/V) within the YORKSHIRE area.

Applicants should have a professional attitude and successful sales experience in the computing industry.

Contact: Bev Stevens

Project Manager

Rural Midlands

neg. to £9,000

A multi-national engineering company is seeking a Project Manager to be responsible for design, development and implementation of a new 'world-wide' engineering system. The system will utilize database, and communications technology and the work will involve international travel.

Applicants should be computer professionals with the ability to manage people and projects. A background in engineering systems and IBM mainframe experience is preferable.

A stimulating project opportunity with excellent scope for future development.

Contact: Bev Stevens

Software Designers

London Based

£6,000 - £9,500

Opportunities exist for real-time programmers to join a small team of software specialists working on the development of communications systems. There are vacancies at several levels but all applicants should ideally have some background in the design and programming of technical applications on mini or micro based systems. Graduates with limited experience will be considered for junior positions.

This is a real opportunity to work in a friendly and professional environment on new technology projects.

Contact: Margaret Stevens

Analyst/Programmers

Thames Valley

negotiable to £7,000

Our Client, well-known and respected in the electronics field, are involved in new ventures in data processing, including the development of Internal (commercial) systems for implementation and marketing outside the company. Two people are required to play a major role in those ventures. Specific hardware or language knowledge is not important, but a minimum of one years programming is necessary. For one position, a knowledge of Assembler (any) would be useful.

Excellent opportunity to join an established and growing company, where enthusiasm and hard work is rewarded.

Contact: Bernard Kiernan

Micro-Programmers

Berks.

up to £7,000

A newly formed micro-systems company has a number of commercial development projects to undertake and requires Programmers to work on micro applications.

Candidates should have at least two years programming on commercial systems, using BASIC or COBOL on either mini or micro-computers.

Excellent salary and prospects.

Contact: Jim Baker

**JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.**

A rare opportunity to further your DP career

We're Tesco. You'll know the name. You may also know that we are immensely successful, Britain's biggest retail group, and that we have a tremendous and continuing record of growth. What you may not know is the extent of the Company's DP facility and the sophistication of its purpose built Computer Centre.

Our Computer Suites house a brand new IBM 3085 with its 12 megabyte storage capacity, 3650 Mass Storage, 3600 Laser Printers, 3380 and 3350 Discs, 200+ On-Line Terminals by the end of 1980. Mini Computers on a rapidly expanding network, we could go on. The range of software includes MVS, TSO, VSAM, IMS, RACF, etc. etc. Two ICL 1904s configurations complete an already impressive computer environment.

Shift Manager £9,750 - £11,000*

As Shift Manager you'll assume total control of an operating team of eleven people working a 3 shift system, and will ensure that the Department meets its objectives in terms of the work processed through the machine rooms. The responsibilities are those that you would normally associate with a Management position.

Qualifications? IBM 370 experience is a must. In addition, at least 3 years as Shift Leader or above in a commercial environment. We would also like a minimum of 7 years' DP experience, together with a working knowledge of OS/VS or MVS.

Computer Operators £6,750 - £7,875*

We have an ambitious Development programme, which involves all aspects of the Company's business. We now require operators with at least 2 years' experience in a large IBM 370 environment and familiarly with JES2/JES3. Ideally, but not essentially, we'd like you to be acquainted with MVS, IMS and TSO. So if you are over 18, have a minimum of 8 'O' levels, and are looking for a rewarding career (we do mean career as opposed to job) in computing, we would like to talk to you.

Rewards

Well, in addition to the very competitive salaries quoted, we believe that you'll enjoy working in Cheshunt - not simply for the challenge, responsibility, job satisfaction or pleasant situation. Your salary (which is supplemented by paid overtime) will be reviewed in April each year, which of course is in addition to increases in salary through personal advancement. And the opportunities for career advancement within the Cheshunt Data Centre are excellent (it is our policy to promote from within).

As you would expect, there's a good range of big Company benefits - a subsidised staff restaurant, Country Club membership, an excellent contributory Pension Scheme and relocation expenses for the successful candidates if he or she need them.

*Effective from 1st April, 1980.

To apply for either of these positions - or for more information - contact Sue Horner, Senior Personnel Officer, Tesco Stores Limited, Delamare Road, Cheshunt, Herts, EN8 9BL. Telephone: Waltham Cross (071) 3248.

TESCO
the new leaders...

Computer Marketing: Kuwait

One of the leading commercial organisations in Kuwait - which employs a large number of European expatriates - wishes to make a senior appointment in its computer division. The company is the sole distributor for Burroughs Corporation computer products in Kuwait and the Gulf States. A significant number of machines have already been sold and installed and further substantial sales are envisaged for B1800 machines; there are also opportunities for mini and large systems of the B8800 type.

Divisional Manager

at least £18,000 + benefits

To manage and control the Burroughs division which operates a computer marketing, technical service and hardware/software support activity. Candidates must have had substantial experience with Burroughs equipment and preference will be given to those with expertise in large systems. Ref: GM57/7200/CW

Applications from Arab nationals will be welcomed. The attractive salary is supplemented by generous benefits including free furnished accommodation, a car, 5 weeks' annual home leave, annual bonus and 60% school fees. Salary is paid locally in Kuwaiti dinars, a fully convertible currency, free of tax.

Initial interviews are conducted by PA Consultants. No details however will be divulged to clients without prior permission. Please send full career details, quoting the reference number on both your letter and envelope, and advise us if you have recently made any other applications to PA Personnel Services.

PA Personnel Services

Hyde Park House, 60a Knightsbridge, London SW1X 7LE. Tel: 01-215 4060 Telex: 27871



A member of PA International

MYRIAD

SENIOR ANALYST/ PROGRAMMER

2 YEAR ASSIGNMENT IN SAUDI-ARABIA

£25,000 TAX FREE

- ★ FREE AIR-CONDITIONED ACCOMMODATION
- ★ CAR PROVIDED (VOLVO)
- ★ COMPREHENSIVE MEDICAL COVER
- ★ FOUR PAID TRIPS PER ANNUM
- ★ EXTENSIVE SPORTS FACILITIES
- ★ DATA GENERAL HARDWARE
- ★ BANKING APPLICATIONS
- ★ ON-LINE SYSTEMS
- ★ STAFF RESPONSIBILITIES
- ★ COBOL

This position arises as a result of internal promotion within Lawrence Wilhelm & Co.; an American consultancy firm with offices in Chicago, Riyadh and Brussels. Applicants, married or single, should be fluent in COBOL with analysis and implementation experience ideally gained on financial systems in a small machine environment. Training in project management would be an advantage and the successful candidate will have the opportunity to join the firm on a permanent basis at the end of the two-year period.

Interviews will be held in London and further information can be obtained by telephoning 01-353 0981 or writing to:

REF. SW/2802

SENIOR SYSTEMS ANALYST

IBM 370/IMS SYSTEMS

NEAR WINDSOR

TO £9000

We are seeking a Senior Systems Analyst to join a major British Engineering Group of Companies presently developing integrated systems to support their business activities during the 1980s. An IBM 370/158 running under MVS together with mini-computers in a distributed processing network are already installed as the hardware base for the new applications.

The Senior Analyst will assume overall responsibility for the business analysis and system design of major new Sales Order Processing and Inventory Control systems which will make extensive use of IMS Database and Real-time techniques. Responsible for the definition, with Users, of system requirements and for the co-ordination of the system design, the person appointed will be able to demonstrate a sound business analysis background and strong personal communications skills. Knowledge of real-time applications is essential.

An excellent starting salary will be negotiated. Benefits include five weeks holiday, free BUPA, flexible working hours and a Sports and Social Club.

This appointment represents an outstanding opportunity to develop your career in a highly professional organisation.

For a confidential discussion on this appointment, telephone Myriad Appointments now.

REF. NW1/2802

COMMUNICATIONS NETWORK ENGINEERS

READING/MANCHESTER

£5500-£7500 TO START

Due to the continuing expansion of our client's market-place a number of new positions have been created for Engineers at all levels within the Systems Engineering Department.

If you can offer one (or more) of the following: ...

- ★ Digital transmission experience.
- ★ Network configuration experience.
- ★ Modem/Mux internals experience.
- ★ Network management experience.

Our client can offer you: ...

- ★ Excellent starting salaries with a review in June.
- ★ The opportunity to further your career with the world leaders for Data Communications.
- ★ Comprehensive on-going training.
- ★ Valuable fringe benefits including 25 days' holiday.

The department provides a sales support and technical support function to users throughout the U.K. and a company car is available for business use. If these positions interest you then write or telephone the number below, or clip and return the coupon quoting reference SW1/2802/CW.

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

SEND TO: MYRIAD APPOINTMENTS LIMITED
FREEPOST LONDON EC4Y 4AA
I am interested in Ref. _____
Name _____
Address _____
Tel. No. _____
Etc. _____

Jeff Price 1.50

A developing future with Southern Gas

Take your place in the sun at Southern Gas.

The Regional Headquarters is ideally situated in modern air-conditioned offices in Southampton's city centre, and close to attractive public parks.

Southampton itself is enviably located in an area abounding with natural recreational attractions. At the edge of the New Forest it occupies a central position on the South Coast with easy access to Bournemouth, the Solent and the Isle of Wight. Yet London is little over one hour away by train.

As your life develops in the sun, your career will develop at Southern Gas with:

- **NEW TECHNOLOGY** that will keep you up to date;
- **NEW PROJECTS** that will stretch you;
- **NEW TRAINING** that will advance you.

DATABASE SPECIALISTS to £10492

A team is now being established to assume responsibility for the development of a Regional database strategy. In addition the team will provide technical support for the database system and offer technical assistance to applications project teams.

It is intended to initially appoint a Team Leader together with two other database specialists. These key appointments offer truly outstanding career opportunities.

Candidates must have sound experience in the development and application of database systems, supported by a good general DP background.

SYSTEMS PROGRAMMERS to £8775

One appointment will be made to the On-Line Systems Group responsible for CICS, IIS and network control software. The successful candidate will have substantial CICS and ASSEMBLER experience with some knowledge of VTAM, VSAM or DL/I.

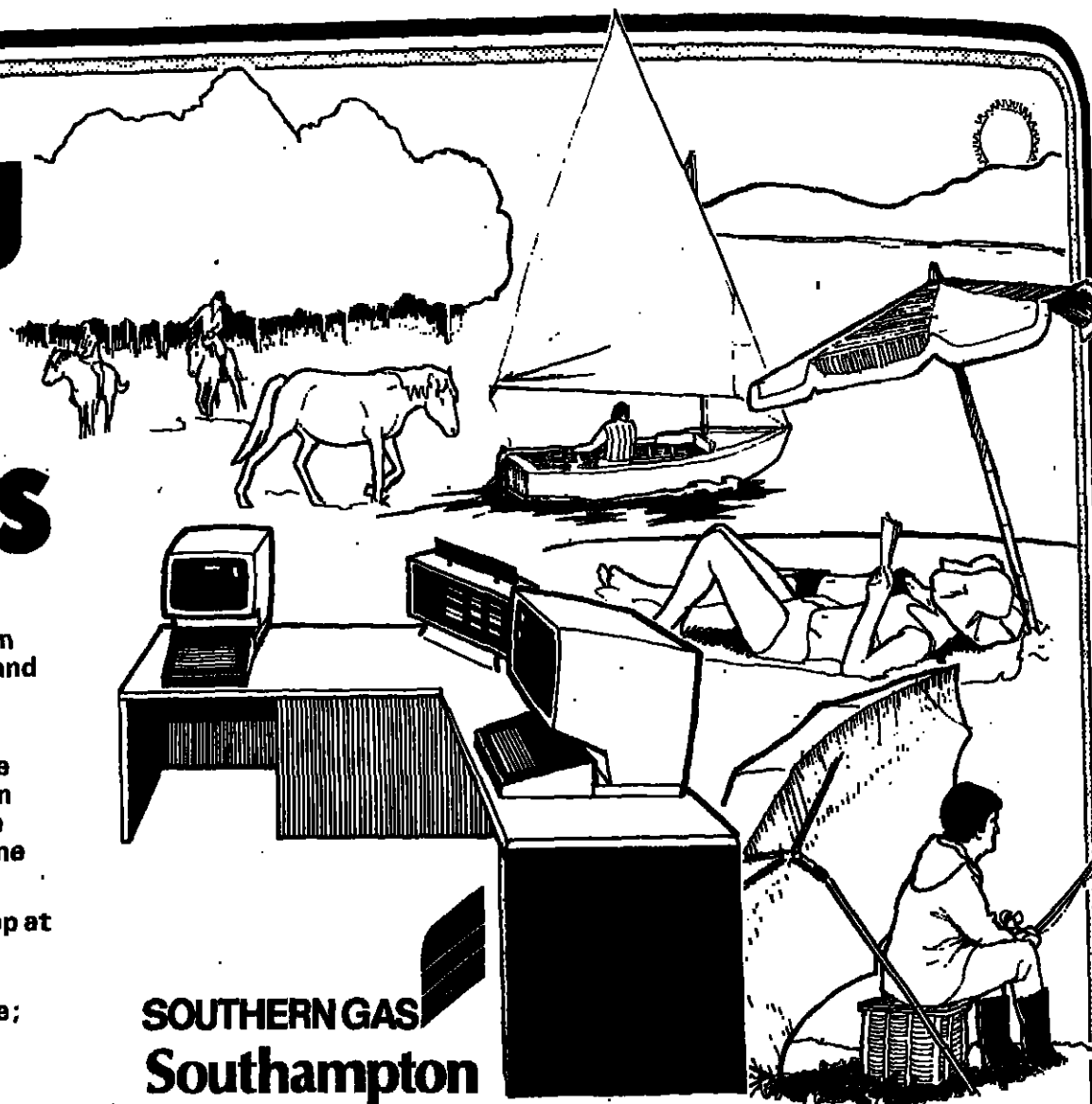
The second appointment is to the Systems Programming Group which is responsible for general systems software support including VS1, ROSCOE, DL/I, COBOL and PL/I. A good programming background is essential including several years systems programming experience. Familiarity with MVS would be an advantage as early migration to MVS is planned.

01-839 3351

MODEM

Up to 8:00pm each evening

Data Processing Staff Consultants



SOUTHERN GAS
Southampton

ANALYST/PROGRAMMERS to £8775

Opportunities are available for people who have had at least 3 years' COBOL or PL/I experience plus some involvement in systems analysis and/or design.

The scope of the work extends across both the systems development and the operations support areas. It ranges from sole responsibility for the analysis, programming and implementation of enhancements to existing systems, through to a defined role in a major development team working on real-time systems.

Various levels of responsibility exist in these areas dependent upon experience.

PROGRAMMERS to £8075

If you have upwards of 2 years' programming experience in either COBOL or PL/I and are looking for responsibility in a challenging environment then we would like to hear from you.

You could either join a team within the Operations Group supporting and enhancing existing systems, or else be part of a larger development group working on major real-time systems.

Exceptionally well-qualified programmers with supervisory experience are required as Programming Team Leaders on several large projects.

To: Modern Computer Services Limited, FREEPOST, London WC1A 0AA
Please send me your Southern Gas 'Information Package'.

Name _____

Address _____

Position _____

Tel (work) _____ (home) _____

Manchester Engineers Communications

£7,500
relocation package
review July



Specialist Computer Recruitment Ltd

London 01-835 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

There can be little doubt as to the advantages of working with a world-wide market leader. Our client is just that. Specialising in the most comprehensive range of network management/multiplexer/modem systems available, they have rapidly captured over 50% of the current private installed UK market. Their service and reputation in support is second to none. Turnover has risen to the current rate of around £20 million per annum.

Such growth has given rise to four key positions; to cover the northern client base.

SYSTEMS ENGINEERS

With a full understanding of communications systems and network components. Your role will combine pre/post sales support with network design responsibilities. Thus sales empathy will be as important as technical awareness.

ASSISTANT SYSTEMS ENGINEERS

An opportunity to enter this challenging aspect of the business, where full product and network design training will be provided.

All positions carry the use of company car, five weeks holidays and free life insurance.

Interested?

Contact Sheila Bradbury on 061 833 0427 or evenings and weekends (up to 9.00pm) Wilmslow 523823.

SALES EXECUTIVES

Our client is one of the success stories of the U.K. — the largest supplier of interactive systems in the country.

c £16,000 + car
Manchester, Sheffield
Leeds, Newcastle

Well established
high growth; highly profitable
OEM

"If you want to be a success — what better way than to grab an opportunity to rise on an ascendant star"

Hank Leman

061-236 7026

TELEPHONE FOR DISCUSSION AND INTERVIEW
INSIGHT MARKETING & PERSONNEL
CONSULTANTS

Austin House, Charlotte Street, Manchester 1

Ref. No. DP12

"Talent, Like Money, Appreciates Unless..."

IBM Specialists £15,000

Informatics, an International Corporation, hardly needs introducing - we have been providing secure, growth-potential opportunities to talented professionals for over 11 years in Britain, the US and Europe and our record for keeping valued personnel is the envy of our competitors. A further planned phase of expansion has created numerous opportunities for IBM-mainframe environment specialists including: Database designers and analysts, on-line applications programmers (CICS, IMS, TOTAL etc.), systems analysts, designers and systems programmers.

We are offering permanent career positions in London and at several of our European offices with the option of a transfer to the U.S. after a suitable settling-in period.

Numerous opportunities also exist for out-of-London based projects, throughout the South East, Midlands and North West England. European based personnel will receive excellent overseas allowances fully reflecting local cost-of-living conditions and in most cases the working environment will

be English. A few positions do however require a foreign language requirement (French or German).

Whilst you probably identify Informatics with software packages, these products are only part of a bigger picture. Our reputation in the industry is that of an established market leader in business applications.

Whilst we are seeking professionals from all backgrounds it is assumed that they will already be well remunerated, professionally, are highly motivated and ambitious. The fluid management style of Informatics provides for a career progression through to the highest levels. The fact that Informatics

does offer top salaries is, in perspective, incidental to the total benefits and opportunities available to our personnel.

You will certainly be involved in rewarding but demanding projects - probably as a member of a small integrated team of professionals working in an autonomous environment with considerable responsibility. You will be expected to contribute new ideas and develop your already considerable skills.

Interviews will be held in London as soon as applications are received and offers will be made without any of the customary and annoying delays. Please telephone me, Karen Whelan (reverse charges accepted) or alternatively send your concise C.V. to:

informatics

**informatics
consulting Ltd.**

Africa House
64-78 Kingsway **01-405-8546**
London WC2B 6AL

contracts set fair..

LONDON COMMUTING AREA

Programmers	DOS/VS	CICS/VS	COBOL	£340 p.w.
Programmers	OS/VS1	PL/1	JACKSON	£320 p.w.
Programmers	OS/VS1	CICS/VS	PL/1	£350 p.w.
Programmers	IBM	COBOL		£280-300 p.w.
Programmers	DOS/VS	CICS/VS	COBOL BAL	£350 p.w.
Analyst/Programmer	OS/VS1	COBOL	EASYTRIEVE	£330 p.w.
System Programmer	OS/VS	VTAM	CICS/VS	£425 p.w.
Team Leader	DOS/VS	PL/1	BAL	£360 p.w.

Telephone Richard Morley on:-

(01) 638-0036

DILOG LIMITED Throgmorton House 15 Copthall Avenue London EC2M 6TP

professionals seeking professionals

SYSTEMS PROGRAMMERS

Your daily life will shortly revolve round MICROPROCESSORS - we can offer you the chance NOW to develop your career in parallel with rapidly advancing technology.

We're the fastest route to tomorrow and you could soon be on your way with us, utilising your skills and ingenuity to the limit in a real-time industrial environment. We can promise you total involvement from system conception to commissioning, including "hands on" machine usage, playing a vital role in an internationally renowned company with an ever increasing demand for its products.

Just fill in the coupon and post to us - no stamp needed - or phone DICK FLETCHER on 01-953 2030 Extn. 3377.

GEC Traffic Automation Limited (Freepost)
Elstree Way, Borehamwood, Herts WD6 1BR.

Name _____	Years of experience ✓ Box <input type="checkbox"/> 3-4 <input type="checkbox"/> 4-6 <input type="checkbox"/> 6-8 <input type="checkbox"/> 8 & over	Qualifications ✓ Box <input type="checkbox"/> Degree or Equivalent <input type="checkbox"/> HNC or Equivalent
Address _____	Language experience ✓ Box <input type="checkbox"/> Babbage <input type="checkbox"/> Intel Assembler <input type="checkbox"/> Coral 66 <input type="checkbox"/> Fortran <input type="checkbox"/> Others (Please specify) _____	Present salary ✓ Box <input type="checkbox"/> £4000-£4500 <input type="checkbox"/> £4500-£5000 <input type="checkbox"/> £5000-£6000 <input type="checkbox"/> £6000-£7000 <input type="checkbox"/> £7000-£8000
Home Tel No. _____		
Office Tel No. _____ (if convenient) Age _____		
Present Company _____		
Position held _____		

Tomorrows world can be yours today.



Our 'Bugs' are light Sensitive!

April 1980

NEW!

SALES EXECUTIVES MIDLANDS and SOUTH EAST

NEW BUSINESS is the life blood of a company. Securing a steady expansion, it is an investment in the future, providing potential for still further growth from the increasing User base.

Our client is a well known and envied British Manufacturer of minicomputers and distributed processing systems with an impressive customer base including numerous "blue chip" Organisations.

They turn over £20 million+ per annum with a continued growth rate of 40%.

To maintain this figure they need FRONT LINE Sales Executives to sell their proven manufacturing control systems to industry.

Full management and technical support is available as impressive demonstration facilities. With a happy and loyal Client base, on-site presentations are acceptable.

IF YOU ARE:-

1. Selling VRC's
2. Bureau Services
3. Minicomputers
4. Involved in pre and post Sales Support

AND WANT

1. Potential earnings of £12K +
2. Top rate, supported products which can be delivered
3. Stability
4. Structured career path
5. On-going training (product & sales)
6. Company car
7. Negotiable guarantee.

In the first instance contact me, SIMON LEVER, Senior Consultant, ON 021-236 3781 (24 hour answering service) OR at home ON 021-420 1574 (evenings and weekends), OR write to me if you wish.

Your application will be treated in the strictest confidence.

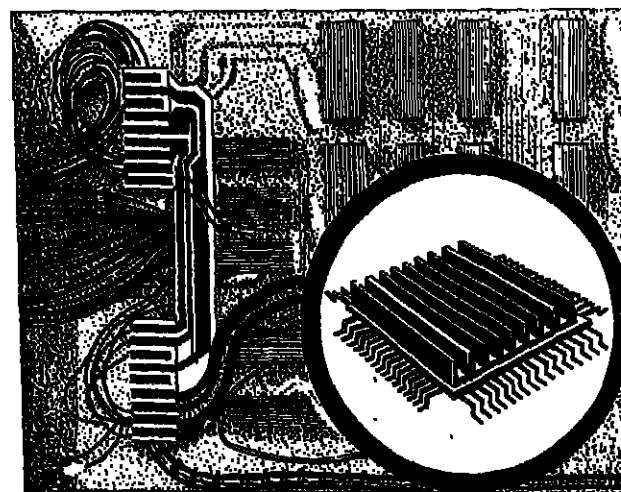


London 01-936 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Personage, Manchester M3 2JA



Specialist Computer Recruitment Ltd

can you design LSI-logic Creatively?



Recent Graduates c£4,500 Project Leaders c£8,500
Design Engineers c£6,500 Design Managers c£11,000
North West - Excellent Relocation Package!

If you are a creative logic designer or microprogrammer interested in LSI technology, these positions offer you a unique chance to be in at the start of an exciting development programme.

Our client is an expanding and highly profitable computer manufacturer, now in the initial stages of designing its future range of LSI computer mainframes. The design team will have the best possible working environment in brand new facilities now under construction, incorporating the most advanced design aids.

For all the positions you need a degree and, apart from the graduate vacancies, a background in logic design

The need is for innovative designers, so the length of experience is less important than your creative ability and enthusiasm.

Please contact Neville John on Nantwich (0270) 627 206 (or Farnborough, Kent, 52880 at weekends).
Or write to him at - OCC COMPUTER PERSONNEL
4 Church Lane, Nantwich, Cheshire.
(Quoting ref. 200CW)

Initial interviews will be held in London, Nantwich or Manchester.

London office - 16 Bedford Row, London WC1R 4EB



3 NEW DEVELOPMENT TEAMS MAIDENHEAD £6,000-£10,000

We have developed the highly successful TRAVICOM airline seat booking, automatic ticket printing and accounting system. Backed by British Airways and British Caledonian Airways, this is an online system offering multi-access airline reservations, ticketing, and accounting to both travel agents and airlines and 200 major travel agencies. TRAVICOM is the world leader in travel automation and we intend to keep it so!

Phase 2 of the development process is now in progress at Maidenhead and we are forming three new teams there to advance the network communications and point of sale features.

We require project managers, team leaders, senior analysts and programmers preferably with DEC RSX-11M or RT11 software, Zilog microprocessor, X25 or other packet switch data communications experience.

We offer the opportunity to participate at the outset in a stimulating project, with unrivalled career prospects, ideal working conditions, international travel opportunities and usual fringe benefits.

Telephone for further details 0628-71817 (evenings and weekends 049-14 3064) or write to:

Computer Communications Limited

Fleming House, King Street, Maidenhead, Berkshire
SL6 1DU

SOMETHING SPECIAL FOR PROGRAMMERS

CENTRAL LONDON (up to £8750)

There are plenty of run-of-the-mill jobs about, some interesting jobs which are badly paid, and some highly-paid jobs which are nevertheless tedious.

This opportunity is SPECIAL because you will have the chance of learning sophisticated methods (including database and communications) on a large mainframe, using on-line program development techniques, and at the same time enjoy a good earnings package, with sound career prospects.

We are recruiting for clients, a well-organised London installation, and all the work is on-site. We would like to hear from programmers with at least 1½ years' practical experience (for less senior positions), ideally including COBOL. For experienced programmers who have used other languages, retraining will be provided. Team leadership ability will be required for more senior candidates.

Please ring us in confidence for a talk, quoting ref 238CW or leave a message on our answering machine after hours and we will contact you.



EDP SYSTEMS 01.637 5796
52-53 Margaret St. London WIN 7FF

JBA

Technical Author (Electronics)

Italy c.£20,000

A small specialised manufacturing company have now completed the development of a highly complex air-borne system. Incorporated advanced electronics and micro-processor based circuitry. A very experienced Technical Author is required to fully document this system, encompassing operation, technical description, repair and maintenance. Qualifications in electronics are essential together with a background in modern systems design. Position open to freelance contractors for permanent employment.

Contact: Mike Creamer

IMS Project Manager

Birmingham

Earnings c.£10,000

An international engineering organisation is seeking a PROJECT MANAGER to formulate the standards and design methodology relating to the use of database technology (IMS) at their new data centre. Applicants should be experienced computer professionals and have a thorough knowledge of IMS consolidated by practical experience. A sound opportunity to influence the use of database technology throughout this highly respected organisation.

Contact: Bev Stevens

Software Programmers

Berkshire

£8,500 - £10,000

A real chance to join a small dedicated group of mini-computer software development technicians in a computer manufacturing company. The team are involved in the design of data management software, compilers, and related packages, for an increasing range of business orientated machines that are recognised as being among the leading products in this sector of the market. Applicants must have at least two years experience of similar work using advanced techniques. A degree or post-graduate work on system software or compiler architecture would be an advantage.

The company offers an attractive employment package, pleasant working environment and the opportunity to assume responsibility for projects within the group concept.

Contact: Mike Creamer

Defence Operational Analysts

Central/S.W. London

neg.£6,000 - £9,000

Our client is a scientific systems company in a well established software group. An impressive sales record has generated two vacancies for staff with operational analysis experience to work on projects assessing the performance of naval systems and equipment. Work is at Head Office in Central London and on site in South West London. A good degree in a numerical discipline is essential. Experience of Fortran or COBOL and of Operational Research in Defence would be an advantage. Salaries and benefits are consistent with a group which places real emphasis on career development.

Contact: Margaret Stevens

INSURANCE COMPANY Systems Analysts

South of England

Salaries up to £7,100 + mortgage subsidy + non-contributory pension + free permanent health scheme + low interest loans + subsidised canteen and sports/social club + all relocation expenses + other benefits.

A very attractive prospect for career-minded Analysts, keen to progress in a growth-orientated modern company putting in database and TV systems, promising exciting design and development work well into the 1980's. We are keen to hear from Analysts who have a sound business background, a good knowledge of COBOL, and experience of system design over two to three years, ideally in an accounting, financial or banking environment.

Contact: Mike Creamer

Development Programmer

For First-Time Mini User.

Surrey

c.£7,000 + bonus

A well established commercial organisation wishes to recruit an Analyst/Programmer to assist with the design and development of their first minicomputer systems. Candidates should have at least three years experience of high level languages in the development of accounting/financial/stock applications. This is a unique opportunity to be the first member of the d.p. function.

Contact: Jim Baker

Programmers

Berkshire

up to £7,000

A well established British company specialising in industrial systems has opportunities for Programmers to join the expanding development teams. Candidates, preferably graduates with at least twelve months programming, should have experience of minicomputers in technical, industrial or process control applications. Large company benefits including relocation.

Contact: Jim Baker

Systems Programmer

Rugby

up to £7,000

A medium size engineering company has a vacancy for a TECHNICAL SUPPORT PROGRAMMER to join a small team responsible for systems software and to assist in applications programming. Applicants should have a good education with a minimum of 2 years IBM DOS/VS programming experience together with the ambition and ability to work with systems software.

An ideal opportunity to develop a career in system software.

Contact: Bev Stevens

JAMES BAKER ASSOCIATES,
International Personnel Consultants
32 Savile Row, London W1.
Tel: 01-439 9311.

April 1980

CONSIDER 1980 — What can you foresee for yourself in 1980 and beyond?

- Continued maintenance of existing systems? — A very restricted program of new systems development?
- Predictable and limited personal rewards? — Joie de Vivre?

CONSIDER MOUNCEY'S 1980 AND BEYOND (just to name a few)

- Development of a complete, batch and real-time, banking system for an Egyptian Bank based on NCR 8585 using VRX, TRAN-PRO, TOTAL.
- Development of a large Order Processing/Distribution System for an overseas client based on ICL 2972, using VME/B, IDH, IDMS.
- Financial applications system development on PDP 11/70 under RSX11M and MACRO II.
- Development of a Personnel Records system on UNIVAC 1100 using DMS 1100.
- Development of Management Information Systems for a multi-national group to operate on IBM 370's using Structured Design and Development Techniques.

CONSIDER THE PROSPECTS

- Working as a Mouncey Team member on new systems development, frequently using advanced technology.
- Challenges both technically and in terms of project responsibilities.
- The potential to work on Overseas projects for both short and longer periods (if that's what you want).

CONSIDER THE BENEFITS

- Above average starting salaries — £8000 to £9500 per annum.
- Opportunities now for PROGRAMMERS, SENIOR PROGRAMMERS, ANALYST/PROGRAMMERS, SYSTEMS ANALYSTS.
- A good non-contributory pension and life assurance scheme.
- A choice from 20 new CARS under our car option scheme.
- BUFA for you and your family.
- SIX monthly salary and personal reviews.

Finally **CONSIDER** your position within the context of Mouncey and Partners, which is an established (1962), stable, profitable, well respected and professionally operated Computer Consultancy and Software House. What is most important, to you, is that we are a company that recognises and positively values our staff as our most important asset.

CONSIDER telephoning or sending a C.V. to me, **ROD EVANS (DIRECTOR)**

Mouncey and Partners Limited
13/14 Cornwall Terrace
Regents Park
London N.W.1

Telephone **01-486 7777**

TOOTING, LONDON SW17

Due to internal promotions, the South West Thames Regional Health Authority require additional operations personnel to be based at the Regional Computer Centre, Springfield Hospital, London SW17. Computing, within the centre, is currently based on ICL 1904S hardware, running under George 3, which provides medical, financial and management information to the Region. A two-shift system is currently in operation and, where indicated, the quoted salaries are inclusive of a shift allowance.

OPERATIONS MANAGER £7430-£8949
Applicants must have a good working knowledge of ICL 1900 hardware and George 3 coupled with proven managerial experience in a sizeable installation. The successful candidate will be responsible for the management of a 60-strong department comprising operations, data control and data preparation staff.

CHIEF OPERATOR £6656-£8083
Reporting to the Operations Manager, the person appointed will be responsible for the efficient day-to-day management of computer room personnel with additional duties in the areas of George 3 optimisation, implementation of new applications plus the introduction and maintenance of operations standards. Applicants should have a solid ICL 1900 and George 3 background with previous supervisory experience.

SHIFT LEADER £7042-£8497*
This post will be of interest to existing Shift Leaders or Senior Operators who already have a thorough knowledge of ICL 1900 hardware and George 3, and who now wish to develop their supervisory skills.

TRAINEE OPERATOR £3414-£4388*
A minimum of 4 'O' levels plus the initiative and ability to work efficiently within a close-knit team are the essential requirements for this position which offers excellent prospects within a go-ahead installation.

DATA CONTROL CLERK £3414-£5468*
Applications are invited from candidates with a good knowledge of George 3 Job Control Language although applicants without previous computer experience will be considered for a trainee-level appointment.

For further details, phone John Wynton, or write to:
Modem Computer Services Limited, FREEPOST, London WC2N 5BR.

*Includes shift allowance.

01-839 3351

MODEM
Up to 8:00pm each evening

Data Processing Staff Consultants

LONDON SCHOOL OF
HYGIENE AND TROPICAL
MEDICINE
(University of London)

Keppel Street WC1E 7HT

**APPLICATIONS
PROGRAMMER**

To join a small group responsible for the provision of computing services to the School. Duties will include implementation, main tenance and support of application packages on a local mini connected to ULCC.

Applicants should be graduates or have equivalent experience or qualifications with a good knowledge of at least 1 programming language, preferably FORTRAN. Experience in the development of large programmes and some knowledge of statistics an advantage. Salary in the range £8142-£8150 depending on qualifications and experience.

Further particulars and application forms from F. C. Ball, Assistant Secretary, completed application forms to be returned no later than 13th March, 1980, quoting reference XHL/1.

Leading West End
Chartered Surveyors

require intelligent

**EXPERIENCED
PERSON**

to supervise and operate recently installed on-line computer installation with word processing unit.

Particular responsibility for in-house training.

Salary by negotiation.

Four weeks holiday.

Box No. 1082
Computer Weekly

**STAR JOB
SPOT****THE VERY BEST!****SALES SUPPORT
TO £8,000 + CAR
LONDON, MIDLANDS AND HOME
COUNTIES**

We have four MINI computer manufacturing companies with offices around the country who require people with the confidence to deal with clients in a pre- or post-sales situation. All vacancies require a programming background on minis and the jobs will provide an exciting and satisfying career. CW9/1.

**MANUFACTURING
SYSTEMS ANALYST
NORTH SURREY TO £8,500**

Have you a manufacturing or accounting system background? If you have and you would like to know more about TOPICS the IBM manufacturing systems package give us a call. The company using this on-line system as a pilot scheme soon to be installed world wide, are one of the major manufacturers of home entertainment in the world. Your future career is assured if you have 3 or more years' DP background. CW9/2.

**CONSULTANTS
CENTRAL LONDON**

4 large, well-established consultancies with to recruit systems people with all-round experience on third generation equipment and the right personality to deal with clients who require first-rate service. Technical Communications Consultants are also required where in-depth implementation experience of IBM or DEC latest ranges are essential. Excellent fringe benefits and prospects. CW9/3.

**CONTRACT
PROGRAMMERS**

Large 2900 Cobol VME/B London 3 mths
Sys. Designer & Prog. Surrey 3 mths
Shadow PLI DOS London 3 mths
Cobol Total D/B - IBM London 3 mths
PDP Coral 86 Surrey 6 mths
Level 88 IDS TDS Holland 8 mths
Cobol MVS OS/VS1 France 8 mths
L80 TPS IDS Holland 1 yr
IDMS Sys. Analyst - ICL Holland 1 yr
2900 IDMS Abu Dhabi 6 mths

WEER Recruitment Consultants
UNIVERSAL COMPUTER ASSOCIATES LIMITED
01995 3883 (01958 6138 Evenings)
Data Express House, 3 Prospect Place, Heathfield Terrace, Clarendon W. 4

**SYSTEMS AND
PROGRAMMING****ANALYST/PROGRAMMERS**

S.W. London

AROUND £8500

Flexitime

This well-established manufacturing organisation, with up-to-the-minute hardware, is seeking Analyst/Programmers with 3-5 years' COBOL or GEORGE III. The emphasis is on the development of commercial systems, and there is the opportunity to move into full-time analyst positions. A progressive salary structure is in operation and career prospects are excellent.

Ref: IM 8/1

PROGRAMMERS

City

AROUND £6000

Mortgage Facilities

A major international banking organisation can offer interesting work to BASIC and BASIC+ Programmers with around 2 years' experience. A background in financial applications would be useful, but not essential. There are extensive and generous benefits, including mortgage subsidies and non-contributory pensions.

Ref: IM 8/2

RPG II PROGRAMMER

Victoria

AROUND £6000

Generous Discounts

Our client is a market-leader in consumer products. With the recent installation of a System 34, there is a requirement for an RPG II Programmer with 18-24 months' experience to develop new applications. Excellent benefits include staff discounts, non-contributory pensions and free medical insurance.

Ref: IM 8/3

PROGRAMMER IBM 370

Berks

TO £5500

1 yrs. exp.

A well-known company in the cosmetics industry seeks a programmer to complement their highly efficient DP department. TRAINING IN PL 1 will be given where necessary. The installation uses transmission links and databases. Excellent career progression is expected for the successful applicant. Relocation expenses will be paid if necessary and the company offers flexitime and discounted products.

Ref: DB 8/4

PROGRAMMER

Bucks

TO £7500

RPG or Cobol Systems 3 and 34.

A household named company is seeking a competent RPG or possibly COBOL programmer. Retraining will be given if necessary, one year's experience is expected. The company offers 22 days' holiday, a heavily subsidised canteen and discounted group products.

Ref: DB 8/5

**PROGRAMMERS AND REAL TIME
PROGS**

Hampshire and London

£NEG.

This leading consultancy seeks programmers with at least 2½ years' experience. The company has several different machines and uses a multiplicity of languages for both scientific and commercial applications. Comprehensive company benefits including relocation if necessary. This is a real opportunity to expand your range of machines, languages and applications. High-calibre applicants are expected.

Ref: DB 8/6

OPERATIONS**OPERATIONS SUPERVISOR**

Oxfordshire, Days only.

£5000

Responsible for daily running of Burroughs mini-system and organising staff at small site in Oxfordshire. Days only.

HARRIS SENIOR OP.

2 year's experience on any machine to work 2-shift system in S.W. London.

£5400

OPERATIONS MANAGER

Large companies in London and Home Counties, using Burroughs medium systems require management staff with at least 6 years' experience. Benefits include car.

TO £10000

DEC - PDP OPS

Minimum 1 year's experience required by various sites in Central London. Various shift patterns.

£4500

DEC - PDP OPERATOR

Minimum 18 months' experience required by installation in Central London. Days only.

£4400

DATA CONTROL

Many data control vacancies in London and Home Counties for clerks and supervisors. Days and Shifts.

to £5500

IBM/ICL OPERATOR

Chance to switch to IBM for experienced ICL G11 operator North London location.

£4500

ICL 19/2900 DME/B VME/B OPERATOR

N. London based installation, require experienced operators, will look at good G11.

£5500

UNIVAC 90/30 OS3 SENIOR OP

Established installation in City offer top perks + pay for very experienced OS3 operator. 2 yrs. + experience required.

£6000

ICL 1900 SHIFT LDR.

City based company require S/ldr. with 3 yrs. JCL + ops experience. Excellent perks.

c £6500

ICL 2900 VME/B OPERATOR

City installation requires 18 months' experience in VME/B & Sys. 4. Excellent chance to gain latest ICL software experience.

c £5200

ICL 2903/4 SENIOR OP

Small, but needs reliable Op to take heavy responsibility!

£5000

IBM 370 OS OPS SUPT

Supervisor required for team of 4. Sound operating background plus 3 years' in Ops Support or similar role, which should include JCL writing.

c £7500

IBM 3031 OS OPERATOR

Large South London Co. require an operator with approx. 1 year IBM OS Operating experience. Good perks and prospects.

£5200

IBM 370 OS OPERATOR

1 year plus experience required by progressive North London site. Perks include Mortgage subsidy. Prospects of Programming in the future.

£5500

IBM 370 DOS SENIOR OP

C. London Financial site require an operator with 18 months' plus experience, including some knowledge of JCL utilities. Full banking perks offered.

£5700

IBM 3031 DOS SHIFT LDR.

2 yrs. + DOS experience with some JCL and supervisory experience for 2 shift working, London installation.

£5600

IBM 370 DOS OPERATOR

North London site require an operator with 6 months' plus DOS experience. Unusual shift pattern working mainly days only.

£4700

Datascene International Limited
Sceptre House,
169-173 Regent Street,
London W1R 7FB. Telex: 25851

datascene

01-439 7871
24 hour answer phone

Informal Interviews

Marble Arch
CUMBERLAND HOTEL,
DORSET SUITE,
Marble Arch, London W.1.

12 Noon till 8.30 pm.
Monday 3rd March 1980



Development Staff Up to £8600 Computer Centre Staff Up to £7900

Salaries under review

By walking in to our Informal Interviews next week you'll be taking an important step in your career while helping us to make an important step at our development.

At Southwark our Computer Services Division is entering the ambitious second phase of its growth. We have expanded our ICL 2970 hardware and wish to strengthen our systems and Computer Centre functions and so shall be looking for:

Systems Development

Project Leaders
Analysts and Programmers
Computer Centre
Operations Manager
Operations and Control Staff

We have a progressive training policy that will keep you in touch with the latest techniques and we provide good salaries (with overtime rates) and a wide range of benefits. But why not take the first step by calling in to our Informal Interviews, we promise you won't look back.

If you live outside London or are unable to attend and you would like a more information please telephone GEOFF STEGGALS on 01-703 6311, or apply as below.

Telephone 01-701 2870 any time for an application form, or write on a postcard to: The Personnel Officer, London Borough of Southwark, 27 Pockham Road, London SE5 8UB. Please quote reference: CW/8/1179 and job title.

Southwark

The microprocessor revolution

A revolution in design, systems, applications and procurement

The switch from a traditional electro-mechanical base to advanced electronics is the task our client is now facing.

Immediate priority is to harness available technology, both in a cost-effective way and within a short time-scale, involving the integration of R & D, manufacture and marketing, combining the resources already available in sister companies in Europe and the USA.

This technological revolution is obviously presenting our client's existing personnel with what must be their biggest professional and technical challenge yet. This leap forward into new high technology products clearly presents highly unusual challenges which will tax the most able from the software and electronics fields.

To help put the plan into effect, high-calibre men and women are required in the following categories:

Software Specialists

up to £9,500

To develop the total system/software side of all new product design in the UK and Europe.

Digital Design Engineers,

up to £8,500

For digital design, standards, ATE, manufacture and quality.

Purchasing Specialists,

up to £7,500

For procurement globally of electronic components relatively new to the company.

Location: Southern England, well outside London.
Relocation expenses available.

For more information write to or telephone for an application form, quoting ref. CPW2: Dawn Adams.

Cambridge Recruitment Consultants

1a Rose Crescent, Cambridge CB2 3LL. Telephone (0223) 811316

Principal Design Engineers Up to £8,500

Racal-Milgo Limited, the world's leading Data Communications Company, offers a comprehensive range of modems, multiplexers and network management equipment to computer-based users.

To continue the development of our current product range and actively participate in our advanced future projects we require two PRINCIPAL DESIGN ENGINEERS.

Both positions carry project control for new microprocessor based developments which will also necessitate classical analogue/digital design. The communications media involved are digital, analogue and optical.

Our position will involve special responsibility for component standards and selection plus general equipment safety standards throughout our territories.

Previous design experience in a commercial organization is preferred and familiarity with Assembler languages, Z80 and Intel family would be useful. Qualifications to degree/HNC level will be expected and successful candidates will probably be aged 30 years plus.

The attractive remuneration package for these Reading based positions will include five weeks annual leave and membership of an excellent contributory pension scheme with free life assurance. Relocation assistance will be offered where appropriate.

Write to, or ring:
D.J. Kitchenside, Personnel Officer,
Racal-Milgo Limited,
Richmond Court, 309 Fleet Road, Fleet, Hants.
Tel: (02514) 22144

Britain's fastest growing electronics group

RACAL

LIVERPOOL AREA

ANALYSTS

(DR/653) 18 + months IBM experience to £6500
(DR/654) 24 + months IBM ICL background to £7500
(DR/655) 24 + months ICL environment to £6700
(DR/656) Senior Analyst ICL environment c £7000
(DR/657) 24 + months IBM experience to £6500
(DR/658) 18 + months ICL experience to £6000
(DR/659) 18 + months IBM background to £6400
(DR/660) 24 + months ICL experience to £6500
(DR/661) 18 + months ICL orientated to £6000
(DR/662) 24 + months IBM environment to £6300
(DR/663) 18 + months IBM orientated c £8000
(DR/664) 24 + months IBM (CICS) c £8500
(DR/665) Firm ICL background c £8500
(DR/666) Firm experience (any mainframe) c £8500
(DR/667) Firm IBM background c £8000

PROGRAMMERS

(DR/668) 18 + months IBM CICS experience c £8000
(DR/669) Firm IBM COBOL/ASSEMBLER to £6500
(DR/670) 12 + months ICL COBOL to £5200
(DR/671) 18 + months IBM experience to £8000
(DR/672) 18 + months ICL COBOL to £5400
(DR/673) 24 + months IBM/ICL COBOL to £7000
(DR/674) 24 + months senior ICL position to £7500
(DR/675) 24 + months ICL COBOL to £6000
(DR/676) Senior Programmer IBM environment to £6400
(DR/677) 12 + months IBM COBOL to £5500
(DR/678) 12 + months IBM COBOL to £6500
(DR/679) 18 + months large mainframe (COBOL) to £6000
(DR/680) 18 + months ICL COBOL c £5300

MANCHESTER AREA

ANALYSTS

(DR/681) 12 + months any mainframe to £5300
(DR/682) 24 + months ICL environment to £6200
(DR/683) 24 + months IBM background to £7000
(DR/684) Firm ICL background (degree required) £ Neg.
(DR/685) 18 + months IBM environment to £6500
(DR/686) 24 + months ICL background to £6500
(DR/687) Sales support (will travel) to £7500
(DR/688) IBM background to £6000
(DR/689) 18 + months mini background £ Neg.
(DR/690) Experienced IBM analysts to £7000
(DR/691) Senior IBM positions to £7800
(DR/692) Experienced analysts (any mainframe) to £7000
(DR/693) ICL background to £6400
(DR/694) 20 + months any background to £6000
(DR/695) 18 + months IBM environment to £5500

PROGRAMMERS

(DR/696) Senior position IBM COBOL/ASSEMBLER to £7000
(DR/697) 12 + months ICL COBOL £ Neg.
(DR/698) 18 + months IBM systems experience to £7000
(DR/699) 24 + months ICL environment c £5500
(DR/700) Sales support (will travel) to £7000
(DR/701) 3 + years IBM COBOL/ASSEMBLER to £7000
(DR/702) 24 + months ICL COBOL £ Neg.
(DR/703) Senior IBM positions to £8000
(DR/704) IBM assembly position to £5500
(DR/705) 18 + months any mainframe £ Neg.
(DR/706) 18 + months COBOL c £5500
(DR/707) 12 + months ICL COBOL c £4700
(DR/708) Experienced IBM COBOL/ASSEMBLER c £6000

NORTH WEST CONTACT

EDWARD BRUSH

AND MANY MORE!

Interested? Send coupon FREEPOST or phone quoting relevant reference.

NAME _____ AGE _____
ADDRESS _____
LANGUAGES USED _____
PHONE: HOME _____
BUSINESS (will be used discreetly) _____
YRS ANALYSIS _____ YRS PROGRAMMING _____
MACHINES USED _____
JOB SOUGHT _____ REF No. _____
SALARY _____ SALARY REQUIRED _____ CW/1/3



DATA RESOURCES AGENCY,
P.O. BOX 63, 8th FLOOR,
COPTHALL TOWER HOUSE,
HARROGATE HG1 1TS.
TELEPHONE HARROGATE 65311

24 HOUR ANSWERING SERVICE

LEEDS/BRADFORD AREA

ANALYSTS

(DR/709) 4 + years (including programming background) c £7000
(DR/710) 2 + years financial systems - IBM site to £7000
(DR/711) 2 + years commercial systems c £6500
(DR/712) 18 + months (plus programming background) to £6500
(DR/713) 2 + years financial systems (including programming background) to £7500
(DR/714) 2 + years (including ASSEMBLER programming background) to £7500
(DR/715) 2 + years commercial systems (with programming background) £ Neg.
(DR/716) 3 + years manufacturing systems c £7000

PROGRAMMERS

(DR/717) 2 + years COBOL c £6000
(DR/718) 12 + months IBM COBOL £ Neg.
(DR/719) 2 + years COBOL on any mainframe c £5500
(DR/720) All levels PDP BASIC to £6000
(DR/721) 18 + months ICL COBOL - 2900 site to £6500
(DR/722) 12 + months COBOL on any hardware to £5500
(DR/723) 2 + years NCR COBOL £ Neg.
(DR/724) 3 + years COBOL supervising - ICL site to £5500
(DR/725) 2 + years ICL COBOL c £5500
(DR/726) 18 + months COBOL on any mainframe c £5500
(DR/727) 2 + years ICL COBOL £ Neg.

CAMBRIDGESHIRE AREA

ANALYSTS

(DR/728) 3 + years Project leader, commercial systems to £9000
(DR/729) 3 years database design + administration to £9000
(DR/730) 2 + years commercial plus major projects experience to £8000
(DR/731) 18 + months (all data processing background) to £7000

PROGRAMMERS

(DR/732) 2 + years systems programme PL/1, CICS, DOS to £8000
(DR/733) 1 year minimum - all grades PL/1, or COBOL to £6000

TYNE & WEAR AREA

ANALYSTS

(DR/734) 18 + months commercial systems to £6500
(DR/735) 2 + years financial systems to £7250
(DR/736) 3 + years manufacturing systems c £7500
(DR/737) 2 + years (including COBOL programming background) c £6800

(DR/738) 3 + years manufacturing systems £ Neg.
(DR/739) 4 + years manufacturing systems to £8500
(DR/740) 2 + years production systems to £7500
(DR/741) 2 + years (including programming background) c £7000

PROGRAMMERS

(DR/742) 2 + years COBOL on any hardware c £5500
(DR/743) 12 + months IBM COBOL £ Neg.
(DR/744) 3 + years PL/1 c £6500
(DR/745) 2 + years IBM COBOL to £6500
(DR/746) 3 + years ICL COBOL c £6000

GLASGOW & WEST OF SCOTLAND AREA

ANALYSTS

(DR/747) 3 + years financial systems to £7500
(DR/748) 3 + years manufacturing c £7000
(DR/749) 2 years commercial systems to £6500
(DR/750) 2 years IBM preferred to £6500
(DR/751) 2 + years analyst programming any machine c £6300
(DR/752) 3 years general commercial systems c £6850
(DR/753) 18 months analyst programming to £6000

PROGRAMMERS

(DR/754) 3 + years IBM systems programming c £7500
(DR/755) 4 + years CICS, DL/1 to £8500
(DR/756) 2 years IBM 370 systems programming c £6500
(DR/757) 3 + years COBOL, any hardware c £7000
(DR/758) 3 years COBOL, any mainframe to £6750
(DR/759) 3 + years COBOL IBM preferred to £7250
(DR/760) 18 + months COBOL, IBM, ICL c £5800
(DR/761) 3 + years PL/1 c £7750
(DR/762) 2 + years IBM COBOL £ Neg.

YORKS, CAMBS., NORTH EAST
AND SCOTLAND, CONTACT

CATHY SCOTT

DATA



EAST MIDLANDS ELECTRICITY have a 6 megabyte 3032 I.B.M. Computer operating under MVS. Other software includes CICS for teleprocessing, TSD for program development, DLI and DATAMANAGER.

Systems Programmers

at Board Headquarters,
Coppice Road, Arnold, Nottingham.
Salary up to £6660 per annum.

Programmers with sound programming ability in COBOL and/or Basic Assembler languages interested in systems programming.

The successful applicants will be required to work in small teams with responsibilities for Operating Systems, Data Administration and the development of utility programs and routines.

Relevant training in operating systems or database software will be given.

Initial salaries will be based on experience and will be supported by attractive fringe benefits.

Applications should be made on a form obtainable from the Personnel Manager, The East Midlands Electricity Board, P.O. Box 4, North P.O., 388 Coppice Road, Arnold, Nottingham NG5 7HX, and returned by Friday, 14 March 1980.

WORKELECTRIC

The Polytechnic of North London

Computing Service COMPUTER OPERATOR

Applications are invited for the post of Computer Operator.

The Computing Service is based on a Dec-10 with 512K of main store, discs and mag tape. A wide range of software is available for users.

The computer is currently manned from Monday to Friday on a three-shift basis during term time and two shifts during vacations.

Previous experience, though useful, is not necessary as full training will be given. This is a good opportunity for anyone who wants to get into computing, and career development is encouraged.

Salary on scale £3674-64 rising to £5954 plus shift allowance.

Further information from the Head of the Computing Service, The Polytechnic of North London, Holloway Road, London N7 8DB.

Applications should be made on a form obtainable from the Personnel Manager, The East Midlands Electricity Board, P.O. Box 4, North P.O., 388 Coppice Road, Arnold, Nottingham NG5 7HX, and returned by Friday, 14 March 1980.

Initial salaries will be based on experience and will be supported by attractive fringe benefits.

Applications should be made on a form obtainable from the Personnel Manager, The East Midlands Electricity Board, P.O. Box 4, North P.O., 388 Coppice Road, Arnold, Nottingham NG5 7HX, and returned by Friday, 14 March 1980.

WORKELECTRIC

Britain's Computer peripherals industry is taking off.

**Make
sure it
takes you
with it!**

At last a British company is making the massive investment needed to compete with the world-leaders in the manufacture and supply of peripherals. Our client, based in the Home Counties, has a remarkably successful record in this field and is now re-organising so that the company is geared up for competitiveness on a world-scale.

To achieve that, the company is buying in some of the finest marketing talent available and is looking to match it with the skills in the newly expanded Technical Sales area. Formal qualifications are less important than relevant experience and genuine flair for mastering a rapidly developing range of products. Peripherals have become the new economically critical components of all but the largest systems. This is your clearcut opportunity to develop your career and earning power in the area of maximum growth.

Engineering Manager

This expert man-manager will also have both business sense and considerable technical skill, enabling him to understand and help solve sales problems. Supervising a team of up to 15 engineers, the Manager will be responsible for the successful implementation of disc products as well as their service and support.

Technical Disc Support Engineers

To report to the Engineering Manager as part of the after-sales team. Similar experience essential.

Disc System Engineer

A computer expert with total system knowhow for the above team.

Field Engineers

At least 2-3 years' experience in hard discs.

Technical Support Engineer (Printers)

At least 5-6 years' experience in printers, preferably with a manufacturer.

Printer Service Engineers

An ideal opportunity for someone in a Business Equipment environment to develop into the computer business, servicing standard teletype compatible printers.

Training Manager

As well as training the staff of the company and its clients, this experienced Manager will be responsible for setting up 4-5 Regional Field Training Centres completely from scratch.

It will demand considerable imagination from someone prepared for a constant influx of a new ideas.

*With so much to offer,
why is our client being so secretive?*

Because the company expects a massive response, and in view of the time-scale involved, we have been asked to recommend a team — not just individuals — who will form the nucleus of Britain's peripherals industry.

To make sure you're in at the start, ring us between 8.30 a.m. and 8.00 p.m., Monday to Friday, to arrange a preliminary interview. Please quote ref. no. JMC/004

Insight Marketing
& Personnel Consultants Ltd.,
72-75 Marylebone High Street,
London W1M 4AJ
Telephone 01-486 5644

All positions are open to both
men and women.



Hissing Sid contracts Project Recruitment

WHAT FOR?

To apply for one of our career opportunities OF COURSE!

We require

the Captain Beakies, Timid Toads, Arty Owls and Batty Bats of the computer world for other vacancies in the Midlands and South-West.

If you have something to offer besides knowledge of the Forest

APPLY NOW

Immediate interviews for good mainframe
Programmers and Analysts

R Project
Recruitment
Limited
D. P. and Computer
Staff Recruitment

To arrange your interview
or for other details
contact PETER KEAY
on 021-613 5111 (office hours)
or 0202 53616 (evening)

Registered Office
Fifth Floor
Scala House
Hollway Circus
Birmingham 1
Tel: 021-613 5111/9

UNIVERSITY OF LONDON COMPUTER CENTRE Communications Network Support

The University of London Computer Centre has a vacancy in the Network Support Section of the Operations Group. The recruit will join a small group responsible for the day-to-day support of the Centre's extensive and expanding, data communication network. The work is varied and involves the analysis and rectification of technical and operational problems, also liaison with users, staff and suppliers engineers. Two shift working is required covering morning and limited evening shifts for which an allowance is paid. Applicants should have a minimum of 5 'O' levels, possession of 'A' levels would be an advantage. Knowledge of electronic workshop practice and/or, computer operations would be a definite advantage.

Starting salary within the range of £3881-£4976 P.A. (inc) depending on age and experience. Applications giving age, qualifications and previous employment to: MR. P. M. BLACK, UNIVERSITY OF LONDON COMPUTER CENTRE, 20 GUILDFORD STREET, LONDON, W.C.1. Tel. 01-405 8400.

MICRO-PROCESSOR APPLICATIONS

Additional personnel are required to work in a small team on the development of micro-processor applications in the amusement industry. Both hardware and software expertise is required, preferably with INTEL products. Preference will be given to applicants with experience of the techniques employed in inter-connecting a number of remote processors to a central micro or mini computer.

SUMMIT COIN LIMITED
Western Avenue
Bridgend Industrial Estate
Bridgend, Mid Glamorgan
Tel: Bridgend (0066) 80008

to SYSTEMS PROGRAMMER

A major manufacturing and marketing organisation based in Bracknell is seeking a Systems Programmer with 2 years DOS/VS and a solid commercial applications background utilising PL/1 or Assembler.

The successful candidate who will have the ability to assimilate new techniques will become part of a young dynamic team offering systems support to a "state of the art" IBM 3031 installation with future projects including the study and implementation of VM, distributive processing and a network of 4341 hardware to be located in five European locations.

First class benefits are offered including flexitime, modern offices, subsidised restaurant and staff shop. Relocation expenses will be paid if necessary.

IBM
3031

4341

BERKSHIRE

DOS/VS

Please telephone (24 hour answer service) or write to apply Quote Ref: CW111-F

CAPP ASSOCIATES Computer and Professional Personnel Consultants
LONDON and MANCHESTER
01-686 9693 AMP House, Dingwall Road, CROYDON CR9 2AU

SENIOR SYSTEMS PROGRAMMER

IBM MVS £12,000 p.a. plus expenses

Permanent position for professional to join a highly successful small computer services company.

Salary based — European travel 25%

The job is to provide support services in the marketing of our well-known computer service. Relocation expenses paid.

Please reply in confidence to Box No. 1081 Computer Week 1, or call 01-776 1234

THE UNIVERSITY OF LEEDS DEPARTMENT OF COMPUTER STUDIES

Applications are invited from suitably qualified candidates for the post of

LECTURER

in the above Department. Preference will be given to candidates with special interests in DATA PROCESSING, MICRO TECHNOLOGY or SOFTWARE ENGINEERING. Candidates should have a good honours degree or equivalent qualification. Salary on scale for lecturers £5052-£11013 (inc. 1 April 1980), depending on age, qualifications and experience.

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 48/26/AZ. Closing date for applications 30 April 1980.

MYRIAD CALIFORNIA THAMES VALLEY HOLLAND

DOS/VS SYSTEMS PROGRAMMERS— WILL YOU LEAD THE WAY TO THE FUTURE?

Unique opportunities exist for PROJECT LEADERS and PROGRAMMERS now seeking an environment in which their innovative skills and creative powers will be fully recognised. Permanent positions exist at all the three locations and in addition both short term and long term assignments overseas will be available to all employees.

If you would like:

- ★ TO USE THE LATEST IBM 4300 EQUIPMENT
- ★ TOTAL INVOLVEMENT IN SOFTWARE DEVELOPMENT
- ★ POSITIVE AND AVAILABLE CAREER DEVELOPMENT
- ★ EXCELLENT SALARIES + BENEFITS AT EACH LOCATION

and can offer:

- ★ SOLID IBM ASSEMBLER EXPERIENCE
- ★ KNOWLEDGE OF DOS/VS
- ★ AN INQUIRING MIND
- ★ THE DESIRE TO SUCCEED IN A CHALLENGING ENVIRONMENT

Telephone for further information regarding these appointments or complete and return the attached coupon using our Freepost service. All applications will be dealt with in the strictest confidence.

Ref. S4/2802

MYRIAD APPOINTMENTS LIMITED
30 Fleet London EC4Y 1AA Telephone 01-353 0981 24 hours

SEND TO POST MYRIAD APPOINTMENTS LIMITED
30 FLEET LONDON EC4Y 1AA
Name _____
Address _____
Tel No _____
Fax No _____

Command & Control Systems

Surrey to £11,000

Plessey Defence Systems Limited (PDS) is a new business within Plessey Electronic Systems Limited, established as a systems organisation specifically to tackle, on a world-wide basis, current and future projects in the area of Command, Control and Communications. Current projects include PTARMIGAN - the world's most advanced military tactical communications system, WAVE - the first application of data processing to battlefield command and control, and a number of other major projects covering a variety of defence applications. The Command and Control Systems operation of PDS is based at Addlestone in Surrey, and

has responsibility for projects in the areas of information systems for command and control, and packet switched data communications systems. This includes project WAVE, for which contracts for the main development and production phases have recently been awarded to PDS. It also includes Plessey activities related to command and control for the Royal Air Force. Current projects and immediate prospects cover a variety of activities ranging from feasibility studies to major system implementations. Prospects are such that a major expansion of the operation is being sought over the next 1 to 2 years. Opportunities exist at a variety of levels in the following skills:

Software designers/programmers
Systems analysts/designers/engineers
Project management staff
Software quality engineers
Planning engineers

In addition to these skills, staff are also required in the Marketing and Finance functions.

We offer

- A stimulating working environment, where ability, initiative and achievement are well rewarded.
- Salaries up to £11,000 p.a., depending on ability, experience and level of appointment. Generous assistance with relocation is also offered, where appropriate.
- The flexibility and autonomy of a relatively small but expanding organisation reporting at a senior level within a large company.
- A modern office environment.

If you are interested in a new challenge then either telephone Bob Newman, Manager, Command and Control Systems, on Weybridge (0932) 47282 during office hours, or phone or

write to Peter Steiner, Recruitment Manager, Plessey Defence Systems Limited, Station Road, Addlestone, Weybridge, Surrey.

PLESSEY
electronic systems
PLESSEY DEFENCE SYSTEMS

Leaders in Command,
Control and
Communications

Software Specialists in SHOCK MOVE DRAMA!

FROM "MEGABYTE"

On the back of rumours that a hush-hush software house has been established in Watford by a very prominent company, (as published in our previous issue) we can now exclusively reveal that the mystery company is about to break cover. Our own enquiries reveal that they have already appointed staff as a result of our previous "leak", and more are yet to be appointed.

MYSTERY COMPANY NAMED!

In a dawn raid on his home, we confronted David Woolf, the personnel consultant at the centre of this undercover recruitment sweep. "Who is the mystery company?" we asked. "I categorically refuse to confirm or deny that my client is Marcon Space and Defence Systems," he told our correspondent. Not content with this middle-man's answer, we probed further and came up with some surprising information.

FACT: Men and women at all levels of expertise, graduates or of graduate calibre, could join this company. Anyone from a control computing environment - gas, electricity, defence, paper, steel, aerospace, chemicals - in fact, anyone using small computers on control, simulation or data analysis and retrieval systems should apply.

FACT: More senior applicants will need solid real-time experience and a very strong software engineering background with industrial/scientific applications experience.

FACT: The work is far more exciting and challenging than any consultancy operation, with R & D on software, testing, standards and procedures - hardware and software development are handled side by side.

FACT: High salaries and excellent career prospects are on offer.

BEHIND THE FACADE!

Woolf, who expressed fears of being inundated by phone calls from ideal candidates, asked us not to reveal his number... so here it is. Call him today on 0892 562562 (up to 9pm). Demand to know more now. It's your right.

Macmillan
Woolf
Personnel Consultants

Macmillan Woolf Personnel Consultants,
100 Fore Street, Hertford SG14 1AB.

PROGRAMMER/ANALYST

C. £8,000 p.a.

Plus Normal Fringes

Experience: At least two years' RPG 11 in a financial environment. The individual should currently be a responsible and experienced programmer capable of seeing tasks through from beginning to end without guidance. The individual will ideally be working currently on a System 3, System 34 or similar installation.

The Job: Working with the Bank's Systems Analysts on converting and developing its software for use on an IBM System 38 expected end of 1980. Continuing software expansion is expected after conversion and it is felt that the job represents an opportunity for an ambitious RPG programmer to keep at the forefront of the languages' development. The individual will to some extent be responsible for the guidance of a junior programmer.

Foreign benefits will be those associated with a major international bank.

Please write, giving full details of your experience, to:-
Mrs. P. M. Bushell, Personnel Officer
CHEMICAL BANK INTERNATIONAL LIMITED
Union Court, 33 Old Broad Street
LONDON EC2N 1EA

Computer Engineers

As one of the fastest growing suppliers of computer equipment and service in the U.K. we are looking for engineers to complement our very successful support operation. If you feel you can meet our demand for excellence, working on the latest mini and micro based systems, we would like to meet you.

Our continuing expansion and reputation in the market place makes that your career with us will be both interesting and progressive.

This, together with a good salary package and company car, makes us a company you cannot afford to ignore.

We currently have, in all areas, but particularly in the South East, vacancies for the following:

Field Engineers with experience on mini and micro based systems and their associated peripherals
Trainee Engineers with good working knowledge of digital electronics
Senior Workshop Engineers able to troubleshoot peripherals as well as microprocessor based controllers
Workshop Engineers able to check out and test systems and peripherals
Development Engineer able to design controllers and interfaces with a good working knowledge of BASIC and communications

Please contact us either by telephone or by writing to:-
The Engineering Manager
General Computer Systems (U.K.) Limited
Oxton Park, 256-258 Northfield Avenue, London W13 9QU
Telephone 01-579 9401

GCSTEXLEX
COMPUTER
PERIPHERALS LTD.

LONDON SCHOOL OF
HYGIENE AND TROPICAL
MEDICINE
(University of London)

Keele Street WC1E 7HT

APPLICATIONS PROGRAMMER

To join a small group responsible for the provision of computing services to the School. Duties will include implementation, maintenance and support of application packages on a local mini connected to ULCC.

Applicants should be graduates (or have equivalent experience or qualifications) with a good knowledge of at least 1 programming language, preferably FORTRAN. Experience in the development of large programmes and some knowledge of statistics an advantage. Salary in the range £5142-£8160 depending on qualifications and experience.

Further particulars and application form from F. C. Ball Assistant Secretary, completed application forms to be returned no later than 13th March, 1980, quoting reference KHL/1.

BOX Nos.

Box number replies should be addressed to

Box No. 670 Computer Weekly
Dorset House
Stamford
London EC1A 4PU

Senior Programmer

up to £6700 (review pending)

We currently have an interesting position in our Management Services Department at Swindon, Wiltshire.

The applicant will be expected to have at least four years' programming experience on commercial systems and be fully conversant with ICL 2900 COBOL. Some systems analysis experience would also be an advantage.

The Company currently use ICL 2075 and 2900 computers and systems that the successful applicant will be working on include personnel records, pension, property accounting and sales ledger.

As well as career prospects and competitive salary we can offer relocation assistance where appropriate, a non-contributory pension scheme, staff discount on a wide range of merchandise and subsidised restaurant facilities.

Please telephone (0793) 36271, ext 327 for an application form or write to:-

The Senior Personnel Officer
W. H. Smith & Son Ltd.
Greenbridge Industrial Estate
Greenbridge Road, Swindon, Wilts. SN3 3LD

Join us at W.H. Smith - where people matter

WHSMITH

The Informatics Grand Tour.

I understand you can travel straight up into management positions

Informatics is worldwide, the locations are limitless

Anywhere in the USA. Anywhere in the world once you're back to UK

Dependant relocation paid in full. I guess I'll bring my wife.

And my cat

We'll be trained to a fare-thee-well on IBM/370 data based and on-line systems

Grand indeed, salaries up to \$35,000 and super bonuses after 18 months

Paid holidays, paid medical and life insurance. They literally fringe you to the hilt

Generous cash allowances in addition to airfare

Alaska is nice if you like all that snow

I'd like to try Detroit Why?

Travel with Informatics is so enriching!



Informatics will be interviewing in London and Manchester for positions in the USA during the week of March 10, 1980. To arrange a confidential expense paid interview send resume immediately or telephone Ms Mary Casillo at our London office (01-405 8546). Reverse charges accepted.

Informatics Inc.
Africa House
84-78 Kingsway
London WC2B 6AL
01-405 8546

MIDLANDS VACANCIES NORTH WEST

WEST BIRMINGHAM ANALYST/PROGRAMMERS c £5,750
A major manufacturer is seeking analyst/programmers with a minimum of 2 years COBOL experience who are capable of systems design and program specification.

WALSALL SYSTEMS ANALYST to £7,000
This company is seeking a competent systems analyst with an accounting background to develop new applications in this and other areas.

BIRMINGHAM OPERATORS to £6,000
A major installation has an urgent need for quality computer operators. You will have at least 3 years experience of IBM 370, 303X or similar hardware.

WEST BIRMINGHAM PROGRAMMERS c £4,500
This company is currently looking for programmers with a minimum of 18 months' COBOL experience. Knowledge of ICL 1900/GEORGE III an added advantage.

SOLI HULL SOFTWARE PROGRAMMERS to £6,500
Due to expansion this ICL installation needs more software programmers. You will have experience of ICL 1900's/GEORGE II or 2900's/VME/B and knowledge of on-line software.

COVENTRY SYSTEMS ANALYST to £8,000 + O/T
A large manufacturing group is seeking analysts with commercial and/or production experience. They offer in return excellent working conditions, paid overtime and highly competitive salaries.

SOLI HULL SYSTEMS ANALYST to £8,500
A large ICL 2900 will be installed in the summer, with extensive on-line facilities. We need experienced analysts NOW to develop new applications for this machine.

WEST BIRMINGHAM SOFTWARE PROGRAMMERS c £5,750
This computer centre has an ICL 1904S/GEORGE III going to 2860/DME. They are currently seeking software programmers with the ability to support and maintain its systems software.

NUNEATON SYSTEMS ANALYST £7,000 + CAR
A light engineering company is having an IBM 4331 installed. To support this new configuration they are seeking an analyst with a degree/HND capable of communicating with management of all levels.

SOLI HULL PROGRAMMERS to £7,500
The imminent installation of an ICL 2860/VME/B has generated a need for further programmers. Ideally you will have knowledge of COBOL, ICL hardware, and on-line techniques.

Phone PETER GILBERT on LEEDS (0532) 444185 (daytime) or on BRADFORD (0274) 834074 (evenings and weekends), or write with brief details to the address below.

CHESTER SYSTEMS ANALYSTS £ neg
Analysts with a proven track record in a production control environment will find a high degree of job interest and satisfaction with our clients. A programming background, especially would be advantageous.

MANCHESTER ANALYST/PROGRAMMERS c £7,000
If you can combine a COBOL programming background with some systems design experience, then our client can offer involvement in the development of on-line and data-base systems on large Honeywell hardware. IDS & TDS an advantage.

MANCHESTER SYSTEMS CONSULTANT £6,000 + CAR + BONUS + BENEFITS
If you have one year's commercial systems experience which entailed a fair degree of user contact, plus a programming background, then a highly professional system's house would be interested in discussing a new and highly rewarding position with you.

CHESTER PROGRAMMERS £ neg
Our clients operate a range of ICL hardware which will shortly be complemented by the addition of an IBM 370. They currently seek a number of COBOL programmers having experience on either hardware, with preferably a production control background. Super opportunity for career development.

NORTH MANCHESTER PROGRAMMERS £ neg
Our client is willing to negotiate a very attractive salary for COBOL programmer with IBM experience under DOS/VS. Previous on-line and data-base involvement extremely advantageous. Excellent and friendly installation.

PRESTON SENIOR PROGRAMMERS to £8,500
Two years COBOL programming on any hardware which included some on-line involvement will make you of interest to our client. Heat prospects.

PRESTON SENIOR PROGRAMMER to £5,900 + BONUS + BENEFITS
If you have around three years' commercial COBOL programming experience, then you may be the person to join our company at a senior level. Large scale involvement in on-line work plus an excellent salary package. IBM experience preferable.

MANCHESTER COBOL PROGRAMMERS c £8,000
PLAN/DRIVER PROGRAMMERS c £7,000

This major company is undergoing a major expansion and will shortly install an ICL 2960. For the COBOL positions you should have gained good ICL experience preferably with on-line systems. In addition, the company seek PLAN programmers with experience of DRIVER to undertake a communications technical support role.

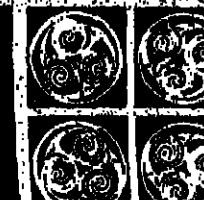
MERSEYSIDE ANALYST/PROGRAMMERS to £6,500
A rapidly expanding systems house has vacancies for analyst/programmers who have had on-line experience on any hardware, preferably IBM. Excellent opportunity for lots of user contact.

NORTH MANCHESTER SENIOR SYSTEMS ANALYSTS to £7,500
SYSTEMS ANALYSTS c £8,000
Our client is looking for experienced analysts with a COBOL programming background, to work on production control applications. ICL background an advantage. Good prospects with a progressive manufacturing company.

Phone GORDON FORBES on LEEDS (0532) 444185 (daytime) or on BRADFORD (0274) 834074 (evenings and weekends) or write with brief details to the address below.

LORIEN COMPUTER SERVICES
Recruitment Consultants

OCS House,
Servia Road, Leeds LS7 1NJ
Telephone 0532 444185
(24 hour Telephone service)



Micros - London

The Systems Engineering and Software House division of one of the largest computer service organisations in Europe is currently seeking a number of experienced mini/micro engineers to work in a consultancy environment in Central London. Programmers/Engineers should offer 2-3 years of Systems Design using minicomputers or microprocessors, with sound knowledge of Assembler language. You will be involved in the design and development of micro systems for data logging, process control, information retrieval, etc. using Intel, Motorola

and Zilog based microcomputers. Computer science graduates preferred, experience of hardware design would be an advantage but it is not essential. Successful applicants will work closely with clients, either alone or as part of a small project team, and therefore must be able to communicate effectively at all levels. Benefits include incentive bonuses, profit-sharing, etc.

£6.5 - 8.5K

Basic +

Programmers and Systems Analysts, preferably with Basic + and knowledge of DEC hardware, RSTS and RSX-11, required by leading manufacturer of interactive business systems. Opportunities in London and other UK locations. Bonus schemes, car allowances and other benefits.

£6-8K

Analyst

A Life Assurance company in North West London is seeking a Systems Analyst for the development, support and enhancement of on-line and batch systems. 2+ years analysis experience with knowledge of PL/I and BAL required. Mortgage subsidy & other benefits.

c. £7.5K

Data Base & Data Comms

UK & Europe

A major American Software Organisation which has built its reputation through Data Base and Teleprocessing Management Systems is expanding its UK and EEC operations, creating opportunities for career-minded and dedicated DB/DC professionals. The requirement is for Applications Programmers, Analysts/Programmers and Systems Analysts with current, or very recent, experience in the implementation and support of Data Base and/or Real-Time systems in a commercial or manufacturing environment. Programmers and Analysts/Programmers should have a minimum of 2 years COBOL, PL/I or BAL.

For the more senior positions, a solid background in Project Planning, Systems Analysis and Structured Programming Techniques is the minimum requirement. These prime positions offer challenge, and provide the financial stability of an established industry leader. Travel or relocation within the EEC will be available to those with the appropriate linguistic skills.

Salaries in the range £8-18K

Message Switching

A prestigious European Systems House and Consultancy with a keen interest in the areas of Message Switching and Packet Switching, is offering positions to Systems Programmers, Designers and Project Leaders with knowledge of advanced distributed processing and network techniques on minicomputers. A degree in a numerate subject would be an advantage. The language requirement is not strict, although a working knowledge of French or German will broaden your choice of opportunities within the Company. Assistance in acquiring language skills will be offered to those wishing to improve their knowledge.

EEC to £17K

Proj. Leaders

Considerable autonomy and responsibility offered to Project Leaders with strong programming background (graduates preferred) by London-based Software House: areas of interest are mini and micro systems (Banking, Information Handling, Industrial Automation, etc). Good career path to management levels.

To £11K

Herts

Junior Managers to required head teams of 6-10 personnel providing software support and maintenance to this major UK Manufacturers customer base worldwide. Recent programming experience (preferably low level languages), 4+ years experience in Computer Industry, and a high degree of initiative required.

c. £9K



10 Grenville Place
London SW7 4RW
01-373 3063

contracts

Computer People Midlands

Contracts for Analysts & Programmers
in the Midlands, Avon & Wales.

TO ALL CONTRACTORS LIVING IN OR NEAR:

SHREWSBURY
CANNOCK
DERBY
WALSALL
COVENTRY
SWANSEA
WORCESTER
NORTHAMPTON

TELFORD
BURTON
NOTTINGHAM
WOLVERHAMPTON
LEAMINGTON
CARDIFF
GLOUCESTER
HINCKLEY

STAFFORD
LICHFIELD
LEICESTER
THE BLACK COUNTRY
REDDITCH
NEWPORT
STRATFORD
BIRMINGHAM

ARE YOU TIRED OF BEING A RALLY DRIVER?

Computer People Midlands have 7 consultants who are in regular contact with all major DP sites in the above areas.

If you, your family (or even your bank manager) would like to see you spending less time in the car and more time at home, then find out about a LOCAL contract by phoning Wendy.

Ring 021-643 2317 or mail the coupon.

Please provide information about contracts in the Midlands.

Name _____ Tel. No. _____
Address _____ (Day) _____
(Ev/Wkd.)

Mail (no stamp) to FREEPOST, COMPUTER PEOPLE MIDLANDS,
Alpha Tower, Birmingham, B1 1BR

Computer Manager

— Hotels

EMI Hotels and Restaurants is expanding its computer facility, and in consequence the above position is open to someone who can grow with us. Based at our Tower Hotel, the position reports to the Hotel Director with a functional responsibility to the Divisional Financial Controller.

The successful applicant, together with a small team of programmers and operators will be responsible for controlling our PDP11/55 processors for front of house and bought and sales ledger accounting, but this will shortly be replaced and a new system developed using Honeywell hardware, and our new Computer Manager will be fully involved in this in conjunction with EMI's Group Computer Services Department. It is envisaged that with this development other hotels will come on line and will be fully computerised with integrated reservations, front of house and back of house systems.

Applicants should preferably, though not essentially, have a knowledge of the hotel industry, together with computer systems experience.

Conditions of employment are as one would expect of a major international employer and there are good opportunities for career developments within the THORN EMI Group. A starting salary in the region £8500 to £9000 is envisaged dependent upon experience.

Please telephone for an application form or send detailed c.v. to Mike Cox, Personnel Manager, EMI Hotels and Restaurants Division, 170 Tottenham Court Road, London W1P 0HA. Tel. 01-388 3131 ext. 146.

EMI HOTELS & RESTAURANTS DIVISION

Royal County of BERKSHIRE

SENIOR COMPUTER PROGRAMMER

£5721-£8827

An experienced programmer is required to work in a small group providing a computer service to support a wide range of engineering and technical information systems. The duties include writing, maintaining and giving advice on the use of computer programs to the Department's engineers and interactive terminals, batch terminal and on-line computer located in the Department. The central computer is a PDP11/20 and carries a full range of peripheral equipment. The Department has two microcomputers to process data applications. Applicants should have a minimum of 5 years experience in one or more of Fortran, Cobol or Basic, a degree or professional qualification is desirable, and essential qualities of enthusiasm and practical approach are also very important.

Application forms are obtainable from the Surveyor's Department, 8th Floor, Kingsway House, 80/82 King's Road, Reading or telephone 01235 88981 ext. 278. Closing date March 31st/1980.

UNIVERSITY OF WYVPOOL
COMPUTER LABORATORY

SHIFT
LEADER

To control basic team of five operators operating the University's Central ICL 1906S System under GEORGE IV on a three-shift basis. Duties also include operating an ICL 2804 and several CTL systems. The successful candidate will have had at least three years' experience of GEORGE III/IV, with proven ability of controlling other operators.

Basic salary (under review) will be on the scale of £4188-£6164 p.a. depending on age and experience, with an inconvenience allowance (18%) additionally paid for three-shift working.

Application forms may be obtained from the Registrar, The University, P.O. Box 147, Liverpool L69 2ZS. Ref. IV/89/CV1.

The SECURE way to increase your earnings

23 top contract jobs
only a phone call away!

Dial yourself
a pay increase!

Manchester 061-833 9341(24 hrs)
Birmingham 021-643 8867(24 hrs)

Business Analyst c £300 per week Midlands

A unique chance to work with a new project management group, at the same time having involvement on a number of smaller projects. The company need you for financial applications writing to a systems specification stage on MAJOR REALTIME PARTS SYSTEM. It's a 6 month contract starting as soon as possible. So ring now for details.

Systems Analyst c £250 per week
Lancashire

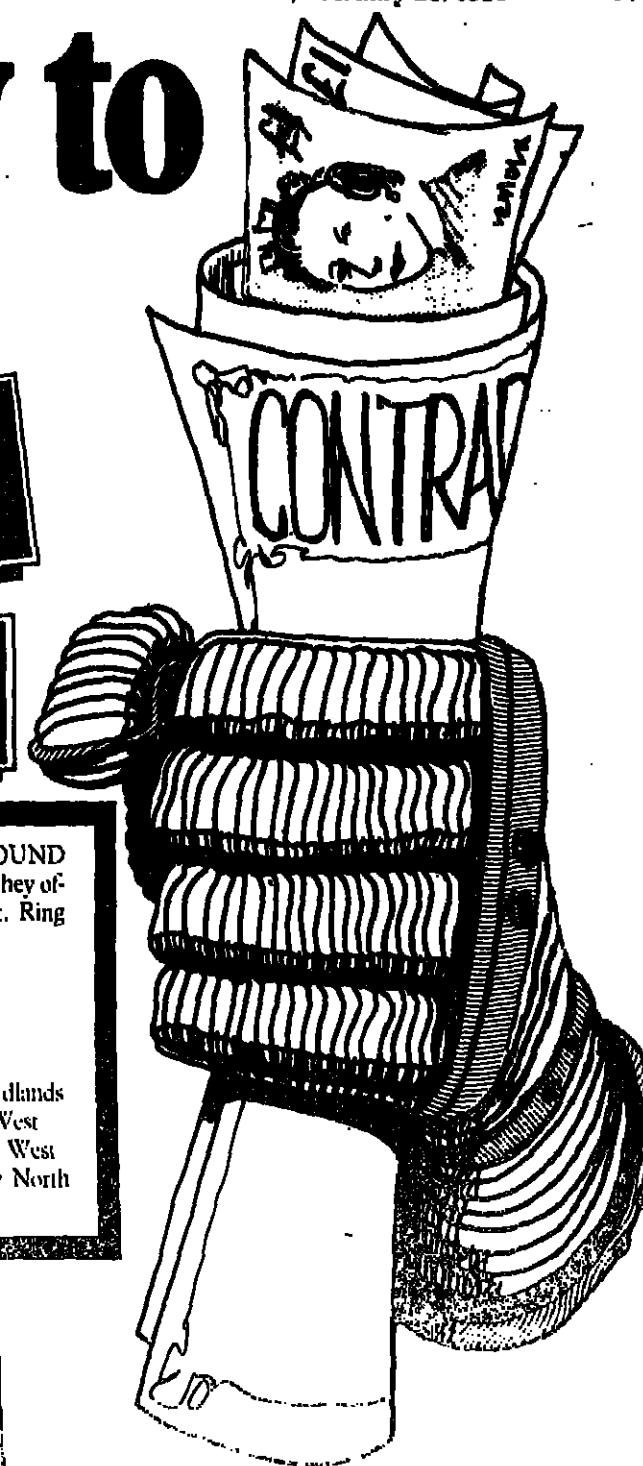
In reach of beautiful countryside there's a national company needing your Hewlett Packard 1000 experience and

Design & Analysis

PHONE OUR JOB LINE
NOW FOR ALL
THE VACANCIES
WE'VE HAD IN
SINCE GOING
TO PRESS!

3 years GOOD PROGRAMMING BACKGROUND with strong commercial experience. And what are they offering? An 8 month contract. An immediate start. Ring now for this really exceptional opportunity.

Systems Designer IDMS exp. c£300 pw Various
Systems Analyst MAXIMOP exp. c£300 pw Midlands
Team Leader IBM 370 APL c£300 pw North West
Project Leader UNIVAC 1100 c£300 pw North West
Senior Analyst HP3000 Image Query c£280 pw North West



Analyst Programmers

c £280 per week North West

How much ON-LINE CICS and TOTAL DATABASE experience have you? You could be the ideal person for our client's IBM 370/148 DOS/VS and ASSEMBLER set up. A 6 month contract is being offered which is renewable. Ring us now for an immediate start.

c £280 per week Midlands

Why work in a boring place when we're offering a move to an urban/rural fringe of an exciting city. You'd be involved in responsible liaison between branches of our client's concern working on IBM 370/158. It's a conversion from OS/VS2 to MVS and it's your chance to be in at the beginning of something big. Ring now for details.

c £270 per week Midlands

How would you like to work on commercial applications with an immediate start? If you have 3 years experience of UNIVAC 90/30, using COBOL and RPGII this one is for you. It's good money for straightforward work.

ICL 7502 PLAN/COBOL c£280 pw Yorkshire
ICL 2960 VMEB IDMS COBOL c£280 pw Yorkshire
IBM CICS, DLI COBOL c£280 pw North West
COMMERCIAL FORTRAN c£280 pw North West
ICL 1500 CDE/VTI c£280 pw Midlands

Ring any time,
day or night,
for fast
attention

For more information, an informal meeting or interview for CONTRACT vacancies
RING Manchester (24hours) Birmingham (24hours)

Knight Programming Support Ltd., Adamson House, Shadlows Square, Manchester M1 2RE, and Kensington House, Suffolk Street, Queensway, Birmingham B1

London-Manchester-Birmingham-Paris-Amsterdam-Liege and New York

Programmers

c £300 per week Midlands

How about working on a REALTIME DB system? If you have 2 years IMS experience plus PLI and ADF, we'll get you in on a chance of an immediate start with a giant company who needs you desperately. It's a 3 month contract and a very popular one so ring us now for details.

c £300 per week Midlands

A large company is looking for you and they are offering fantastic working conditions providing you have 5 years experience in communications/software. To work on PDP11 running under RSX11M programming in RT1.2. This company need you for March/April on an initial 3 month contract. Ring us now for more details of this super opportunity.

c £280 per week North West

Get in at the start of a development project. Your Honeywell level 66 GCOS with IDS/TDS and good COBOL experience makes you just what this company are looking for. You'd be working on commercial applications and an immediate start is offered. Ring now. This really is one of the best chances of getting in on a good thing.

PDP11 DIBOL c£280 pw Midlands
BASIC PROGRAMMERS c£280 pw Various
FORTRAN c£280 pw Various
ICL 1500 VTL/CDE c£280 pw Various
IBM 370 COBOL/CICS c£280 pw Various

Knight Programming Security Deal

1. Absolute confidence guaranteed.
2. Completely informal meetings, where and when you want.
3. Full expenses paid for all meetings.
4. Company accountant for tax, mortgage, insurance and pensions advice.
5. Continuous work for security of employment.
6. Accommodation assistance.

We've produced a guide to contract work just for you, pointing out all the things you have to know. Phone now for a copy of this special problem solving leaflet. All you need to know about going contract the Knight Programming way.



77K PROGRAMMER N. London
1-2 yrs experience of RPG-III Knowledge of IBM System/34 an advantage

To E8K SNR. SYSTEMS ANALYST London
Must have undertaken major role in the design and implementation of at least one important system. Programming background desirable, especially COBOL or RPG-III.

Enrg. PROG./ANALYST Barks
Programmer and analyst/programmer with from 9 months experience of any commercial language but especially COBOL or ASSEMBLER

Many more unadvertised positions

188 FINCHLEY ROAD, LONDON N.W.3
Telephone: 01-794 0202

COMPUTER TWO THOUSAND

COMPUTER WEEKLY CLASSIFIED

01 261 8028/8097/8019

the newspaper computer people rely on

SENIOR PROGRAMMER

The progressive and established organisation, who for many years has applied a computerised system to the management of its business, is now seeking a Senior Programmer to work at their City office. The successful candidate will be a member of a small team of programmers, involved in research and development of new systems, and will be responsible for the design and implementation of new systems. The successful candidate will have a minimum of 5 years' experience in the design and implementation of new systems, and will be responsible for the design and implementation of new systems. The successful candidate will have a minimum of 5 years' experience in the design and implementation of new systems, and will be responsible for the design and implementation of new systems.

PROGRAMMING TEAM LEADER c£8250
Large company situated in the City are looking for a programmer who has at least 4 years' experience with ICL COBOL and has led a team of programmers on a project. Real-time or Plan experience an advantage. Benefits include a pension scheme, non-contributory pension, free lunches and flexible Ref. G801/2.

SENIOR ICL PROGRAMMERS up to £7900
Major company based in the City are looking for Senior Programmers with at least 3 years' COBOL programming experience, preferably ICL background. Benefits package includes pension, season ticket loan, annual bonus, flexitime, free lunches, sports and social facilities. Ref. G802/1.

ICL COBOL PROGRAMMER c£7500
Programmer wanting to consolidate their career with this City based company should have 3 or more years' COBOL experience with PL/I or VMS experience an added advantage. Benefits include bonus, free life assurance, subsidised canteen and non-contributory pension. Ref. G802/3.

IBM RPG II PROGRAMMER c£8000
Our clients based in London have a vacancy for an RPG II programmer with at least 1 year's experience on the IBM range of machines. The rewards within this company include MORTGAGE subsidy, staff loans, LV's, season ticket loans. Ref. G802/4.

IBM RPG II PROGRAMMER c£8000
The fast expanding and well-established organisation based in West London is looking for a candidate to join a small programming team. Applicants should have at least 12 months' RPG II programming experience. Benefits include bonus, season ticket loan, contributory pension, flexitime, LV's and 4 weeks' holiday. Ref. G802/5.

PROGRAMMER/ANALYST To £7000
A manufacturing company, based in Middlesbrough, has a requirement for a Programmer/Analyst to join their small DP section. Applicants should have a minimum of 2 years' COBOL experience, preferably gained in a commercial accounting environment. Analysis experience, though desirable, is not essential and planned development work with distributed systems will ensure a high degree of involvement and responsibility. Ref. P81.

SENIOR PROGRAMMER To £7000
A City based organisation requires a Programmer with 3 years' COBOL experience, gained in a commercial environment. A knowledge of DBS and communications would be an advantage. Ref. P82.

SENIOR PROGRAMMER To £8000
A large financial organisation, based in Central London, is seeking a Senior Programmer with approximately 4 years' experience who has worked on main computer projects, i.e. DBS, DATA GENERAL. The successful candidate will be responsible for the design and implementation of new systems. Benefits include bonus, season ticket loan, contributory pension, flexitime, LV's and 4 weeks' holiday. Ref. P83.

??? PART-TIME SYSTEMS PROGRAMMER c£High
Our client, a small specialised independent consultancy, wishes to retain the services of a self-motivated freelance IBM AS/400 Programmer. For more detailed information contact Robert Lovelady.

PERMANENT OPPORTUNITIES c£High
Permanent opportunities for programming, permanent opportunities for promotion senior, permanent opportunities for greater personal satisfaction.

The above are all permanent features of any job offered by Computer Two Thousand and among our clients are major companies in all fields of industry and commerce.

The positions above are a sample of the latest of a long and ever growing list so no matter what your experience is, if you don't find one of these still get in touch.

Computer Two Thousand
Data Processing Consultants
217-218 Tottenham Court Road
London W1P 9AF
Tel: 01-636 7584 (24 hrs)

2000

BIRMINGHAM AND WEST MIDLANDS

To £7,000 ANALYSTS
Business Systems Analysis experience. New Systems development.
£7,500-£8,000 ANALYST
On-Line Order Entry experience. Database desirable.
£5,500 PROGRAMMERS
2/3 years' Cobol experience. Commercial applications.
To £6,500 SYSTEMS ANALYSTS
Wide range of commercial applications. 2/3 years' experience.
£11,000 + Car
On Target **SALES**
Proven track record in Sales, Hardware and Software.
£6,000 PROGRAMMERS
Cobol Programmers, preferably ICL Hardware - Bureau. Wide ranging applications.
£8,000 + Car Scheme SENIOR PROGRAMMERS
Several years' Programming experience. Minis and Mainframes.
£6,000 PROGRAMMERS
2/4 years' Cobol experience, preferably IBM Hardware. Commercial applications.
£4,700 JUNIOR PROGRAMMERS
1 year's + experience in Programming ICL Cobol. Manufacturing situation.
£8,000 PROGRAMMERS
Assistant to Chief Programmer. Wide range of business applications.
£7,500 SYSTEMS DESIGNERS
3 years' minimum experience in a commercial installation.
£4,000+ SENIOR OPERATOR
At least 2 years' operations experience preferably Univac.

BUCKS., STAFFS., WORCS. WOLVERHAMPTON BANBURY

£9,000 + Car OPERATIONS MANAGER
Man Management experience. Dedication and application, Univac if possible.
To £8,000 ANALYST
On-Line Real Time—Financial and Commercial Programming background.
To £8,500 PROGRAMMER
2+ years' preferably RPG (or possibly Cobol or Assembler). Real Time.
To £7,500 ANALYST
Strong financial background required. A.M.I.S. Cobol background.
To £6,500 PROGRAMMER
Software House — Cobol and/or any Mini language.
To £6,000 ANALYST
Software House—Programming background. Commercial packages.
C.£6,000 DATA SERVICES SUPERVISOR
Data Entry and Control. Supervisory experience.
£7,000 SYSTEMS PROGRAMMER
Latest ICL equipment. DME/VMEB.
C.£6,500 ANALYST
ICL. Wide range of Commercial applications.
To £6,800 SOFTWARE PROGRAMMER
Mid-20's onwards. IBM Software CICS etc. On-line.
C.£6,000 TECHNICAL SUPPORT
2/2 years' Software/Technical Support. Honeywell GCOS.
To £8,000 BUSINESS ANALYST
Very wide range of business problems — total solution philosophy.

EAST MIDLANDS

To £7,500 PROGRAMMER
1 year + Cobol experience. Manufacturing environment.
£Negotiable SYSTEMS ANALYST
Minimum 2 years' Analysis experience. Commercial background.
To £6,500 ANALYST/PROGRAMMER
At least 2 years' Analysis experience. Knowledge of Cobol.
£Negotiable PL1 PROGRAMMER
Must have PL1 experience. Manufacturing environment.
£Negotiable SYSTEMS ANALYST
At least 3 years' Analysis experience. Product Support area.
£Negotiable PROJECT LEADER
At least 5 years' D.P. experience. Project co-ordination—user environment.
£Negotiable SYSTEMS ANALYST
Analysis experience and knowledge of Cobol. Support Analyst role.
C.£7,500 SENIOR PROGRAMMER
5 years' Cobol experience. Mini-Computers.
C.£6,000 PROGRAMMER
2 years' Cobol experience. Manufacturing environment.
C.£7,000 SYSTEMS ANALYST
Analysis experience. Database and On-Line Systems Design. Manufacturing environment.
To £6,000 PROGRAMMER
2 years' Cobol experience.
£3,000-£4,000 JUNIOR PROGRAMMER
Some IBM Cobol experience.

OVER 50 NEW JOBS BEING REGISTERED WEEKLY INTERVIEWS—ANY TIME—WALK IN BETWEEN 9 a.m. - 5.30 p.m.
EVENINGS AND WEEKENDS BY APPOINTMENT CENTRAL LOCATION. REVERSE CHARGE CALLS ACCEPTED
FREEPOST—BLACKWOOD ASSOCIATES, FREEPOST BIRMINGHAM B2 4BR

Blackwood Associates Recruitment Consultants

26 Waterloo Street, Birmingham B2 5TJ
Telephone: 021-233 2921 (24 hr. service)
A Member of the CPS Group of Companies

CAMBRIDGESHIRE

Our client, a major British company located in a very pleasant part of England, is embarking on a major programme of extensive new systems developments.

The applications areas are wide and cover all aspects of general financial and commercial systems together with the creation of an order entry system.

The existing IBM mainframe will be replaced later this year by a 4341 configuration which will utilise the latest on-line and database software. A distributed data processing network using 8100 equipment is currently under development.

Our client seeks to recruit a number of systems analysts at salaries in line with the indicators shown. In addition, relocation expenses to an area of reasonably priced housing will be reimbursed and a bridging loan facility is available to suitable applicants.

TEAM LEADERS

Candidates for these positions must have a number of years experience in developing practical cost effective commercial systems. A good technical background is important, preferably including on-line and database experience, as is a practical understanding of business systems problems from the users point of view. It is essential that candidates are able to demonstrate a successful record not only in implementing several major projects but in carrying the full responsibility for those projects. (Ref CW/8022)

SENIOR SYSTEMS ANALYSTS

These positions should appeal to applicants who have at least two years experience of systems analysis, design and implementation of major commercial systems. Past achievement should include a significant role in the implementation of at least one major systems project from feasibility study to completion of the implementation phase. Technical requirements should preferably include some experience of database and on-line systems and a programming or O & M background would be useful. (Ref CW/8023)

SYSTEMS ANALYSTS

These positions will offer ambitious analysts every opportunity to broaden their experience in a positive and dynamic data processing department where the accent is firmly placed on the successful achievements of an ambitious programme of systems redevelopment. Candidates must have at least 18 months' systems analysis experience preceded by a period in programming, O & M or in a user environment. Applications areas of interest are general commercial, stock control and order entry. (Ref CW/8024)

Interested candidates are invited to contact Roger Pickin by telephone or in writing via the Harrogate office or evenings and weekends at Matlock (0629) 2609 to arrange a confidential discussion.

Ivor Norton Management Services Ltd

LONDON
52 Shaftesbury Avenue, London W1V 7DE
01 734 8862

HARROGATE
P.O. Box 83, Copthall Tower House,
Harrogate HQ1 1TS Harrogate 66828

GLASGOW
11 Borthwell Street, Glasgow, G2 8LY
041 226 4911

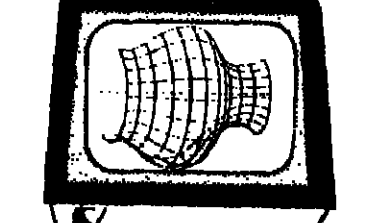
24 HOUR ANSWERING SERVICE (0423) 55311



Computervision Europe, with operations in 10 European countries, is part of the Computervision Corporation, a major U.S. company, which is the world leader in the design and manufacture of Computer Graphics Turn Key Systems - one of the fastest growing high technology industries. Computervision's Computer-Aided Design/Computer Aided Manufacturing (CAD/CAM) systems, and comprehensive support services, are helping customers to increase productivity worldwide.

We are a young, dynamic, highly profitable organisation currently embarked upon a major expansion programme to satisfy market demand.

Computervision Ltd.



Productivity... by Design

Field Service Engineers and Installation Engineer

up to £8000 + 2-litre car Southern England
Field Service Engineers Installation Engineer

We currently have several opportunities in SOUTHERN ENGLAND for Field Service Engineers, with a good knowledge of electronics and over two years' field experience in the computer industry. Candidates will have a desire to be involved with a systems approach rather than just hardware repair.

The successful candidates will be involved with the installation, commissioning and on-going support activities for their respective customer base.

Experience of mini-computer systems and associated peripherals is required, although previous experience of CAD systems is not essential as full product training will be given.

We currently have an opportunity in SOUTHERN ENGLAND for a Field Service Engineer to join our installation team.

The successful candidate will be involved with pre-installation visits to customers to discuss layout, power requirements, general operating environment and the planning of installations. There will also be participation in the actual installation with the local Field Service Engineer leading to final acceptance of the system by the customer.

Previous experience of mini computer or small mainframe installations is desirable, although an experienced engineer with an aptitude for this type of work would be provided with full product training.

Salaries will be up to £8,000 p.a. plus profit sharing bonus, and the associated benefits package will include free BUPA and life assurance cover. Assistance will be given with relocation expenses, where appropriate.

We shall be commencing interviews for these positions shortly, so if you are interested please contact Mike Fuller, Customer Support Manager or Bob Powell, Administration Manager, Computervision Limited, Penn Street Village, Amersham, Bucks. Tel: High Wycombe (0494) 714771.



HERTFORDSHIRE COUNTY COUNCIL
HIGHWAYS DEPARTMENT

SENIOR ANALYST

SALARY £6827-£7908 + £188 FRINGE WEIGHTING
(presently under review)
GRADE PO1 (E/F)
POST NO. 8E45

The Job

We offer you the opportunity to join the Highways Computer Unit where you will be able to develop and support a wide variety of engineering and management information systems.

You will be responsible for the control of development projects from feasibility through to implementation with the assistance of a small team whose work you will plan and direct.

Existing applications for which the team is responsible are Road and Bridge Design, PERT and Staff Costing, Street Lighting Inventory and Financial Control and Transportation Modelling.

The present County Council computer is an NCR Crismen 8580 with 1 Megabyte of Memory operating under VMS. Access to Highways department is via Courier Service and a single terminal. The department also makes considerable use of computer bureaux via a remote batch terminal and a number of interactive terminals.

In June 1980 the Highways department is to take delivery of PRIME 350 mini computer which will be linked to the County Council Computer and a computer bureau and which will service a network of terminals within the site at Golding, performing a wide range of activities, also connected to the PRIME will be a new online drum plotter.

New projects for the team include the development of a new PERT system including Target Design Costing and new Transportation Modelling facilities as well as providing technical support for the departments impeding use of MOSS.

The Person

You should have a degree in Civil Engineering, Applied Mathematics or Computing and extensive experience in technical computing with a background in COBOL and FORTRAN programming.

Please telephone or write for application forms and further details to Deborah Martindale, Highways Department, Goldings, North Road, Hertford SG14 2PL. Telephone Hertford 54242, Extension 8020.

Closing date 14 March 1980

PRIME AUSTRALIA

Prime Computer of Australia Limited would like to discuss the potential employment of Hardware/Software Engineers in Sydney, Melbourne and Perth.

ADVANTAGES

- Excellent
- ★ Puckette salary
- ★ Team
- ★ Potential advancement
- ★ Working conditions

Please telephone - no travel charges

Lionel Singer
Managing Director
PRIME COMPUTER OF AUSTRALIA LIMITED
Tel: (010 61 2) 929 0044

IBM DOS OPERATOR

This is an excellent opportunity for an operator with approximately 12 years' DOS V8 experience to join a City-based financial organisation. The chosen candidate will be required to operate a newly installed IBM DOS initially on a DAYS only basis. Career progression should be rapid and be solely dependent upon ability. In addition to an excellent salary, generous benefits include subsidised MORTGAGE, L.V's and N.V's, pension, etc.

IBM OS VSI/MVS OPERATORS

We have a number of clients in C. London and the Home Counties who are seeking Operators with 12 months' + OS experience. Positions are available on both 270 and New Range 3030 Series computers. Two of the vacancies currently available carry subsidised MORTGAGE, L.V's and N.V's.

IBM DOS SHIFT LEADER

A minimum of 2 years' DOS operating experience is a requirement for the Computer Services Co. based in C. London. Applicants will be self-motivated and conscientious, and should be conversant with bank and Utilities. The successful applicant can expect rapid professional prospects. Ref. JKS.

Computer Two Thousand
21-23A Tottenham Court Road
London W1P 0AA
Tel: 01-636 7584 (24 hrs)

THE UNIVERSITY OF LEEDS

DEPARTMENT OF COMPUTER STUDIES
Applications are invited from suitably qualified candidates for the post of

LECTURER

in the above Department. Preference will be given to candidates with special interests in DATA PROCESSING, MICROTECHNOLOGY or SOFTWARE ENGINEERING. Candidates should have a good honours degree of equivalent qualifications. Salary on scale for lecturers £6062-£10,484 (from 1 April 1980), according to age, qualifications and experience. Application forms and further particulars may be obtained from the Registrar, The University of Leeds, Leeds LS2 9JT, quoting reference number 48728/A2. Closing date for applications 30 April 1980.

New Forest

Senior Programmer

(Salary negotiable to £8080, plus comparability award pending payable from 1.1.1980)

If you (i) have had two years sound programming experience; (ii) are experienced in on line applications; (iii) preferably have a background in COBOL and/or NEAT 3; (iv) are interested in working in extremely pleasant rural surroundings in the New Forest and are looking for a challenging position with good prospects then we would like to hear from you

We are (a) currently processing a wide range of financial and non-financial local authority applications; (b) in the process of replacing our current mainframe (which we have outgrown) with a 512K NCR 8555, due for delivery in September 1980; (c) planning significant developments involving a substantial increase in the use of the telecommunications network currently in operation.

Benefits available include: removal expenses, temporary lodging allowances, up to £1980 towards the cost of other specified relocation expenses and a Casual User car allowance. It may also be possible for temporary housing to be available.

Written applications (quoting Post No. F.31 and giving the names of two referees) containing full personal details etc. to the Personnel Manager, New Forest District Council, Appletree Court, Lyndhurst, Hants., SO4 7PA, by Monday, 10th March, 1980.

(Prospective applicants requiring more information are asked to contact the Computer Section on Lyndhurst 3121)

KEY OPERATOR

He/She will be involved in the day-to-day operating of the Kienzle 2000 and related activities.

The work processed includes Bought Ledger, Sales Ledger, Invoicing and Vouchers/Salaries.

We are able to offer a Top Salary which is reviewed annually together with LVs. 3 weeks holiday and a pleasant working environment.

We are situated almost on the doorstep of Victoria Station. For further details please contact:

Mr. Thompson
RAMONEUR CO. LTD.
18 Danbith Street, London S.W.1
or phone him on 01-834 1321

Hoggett Bowers

Executive Selection Consultants

Data Processing Manager

North East,
negotiable from £10,000+car

The appointment is to join the senior management team of a major manufacturing company. Reporting to the Chief Financial Executive the Data Processing Manager will be responsible for the management of the company's DP activities and the development of programmes and systems to meet the management needs of this rapidly expanding business. Key areas will be the implementation of more effective stock control systems, the conversion of current batch systems to on-line, an objective assessment of the existing configuration and presentation of recommendations for future hardware requirements which may include linked mini-computers. Candidates, 30+, educated to at least degree level, must show outstanding systems and DP experience gained in a variety of environments. Success in this position, which carries an excellent benefits package and relocation assistance where necessary, could lead to a senior appointment within 5 years.

A.D. Kelly, Ref: 44053/CW. Male or female candidates should telephone in confidence for a Personal History Form to: NEWCASTLE: 0832-274855, 4, Mosley Street, Newcastle-upon-Tyne, NE1 1DE.

Computer Manager

Hotels

EMI Hotels and Restaurants is expanding its computer facility, and in consequence the above position is open to someone who can grow with us. Based at our Tower Hotel, the position reports to the Hotel Director with a functional responsibility to the Divisional Financial Controller.

The successful applicant, together with a small team of programmers and operators will be responsible for controlling our PDP (11) processors for front of house and bought and sales ledger accounting, but this will shortly be replaced and a new system developed using Honeywell hardware, and our new Computer Manager will be fully involved in this in conjunction with the development of other hotels which will be fully computerised with integrated reservations, front of house and back of house systems.

Applicants should preferably, though not essentially, have a knowledge of the hotel industry, together with computer systems experience. Conditions of employment are as one would expect of a major international employer and there are good opportunities for career development within the THORN EMI Group. A starting salary in the region £8500 to £9000 is envisaged dependent upon experience.

Please telephone for an application form or send detailed c.v. to Mike Cox, Personnel Manager, EMI Hotels and Restaurants Division, 170 Tottenham Court Road, London W1P 0AA. Tel: 01-388 3131 ext. 148

EMI HOTELS & RESTAURANTS DIVISION

MYRIAD CALIFORNIA THAMES VALLEY HOLLAND

DOS/VS SYSTEMS PROGRAMMERS— WILL YOU LEAD THE WAY TO THE FUTURE?

Unique opportunities exist for PROJECT LEADERS and PROGRAMMERS now seeking an environment in which their innovative skills and creative powers will be fully recognised. Permanent positions exist at all the three locations and in addition both short term and long term assignments overseas will be available to all employees.

If you would like:

- ★ TO USE THE LATEST IBM 4300 EQUIPMENT
- ★ TOTAL INVOLVEMENT IN SOFTWARE DEVELOPMENT
- ★ POSITIVE AND AVAILABLE CAREER DEVELOPMENT
- ★ EXCELLENT SALARIES + BENEFITS AT EACH LOCATION

and can offer:

- ★ SOLID IBM ASSEMBLER EXPERIENCE
- ★ KNOWLEDGE OF DOS/VS
- ★ AN INQUIRING MIND
- ★ THE DESIRE TO SUCCEED IN A CHALLENGING ENVIRONMENT

Telephone for further information regarding these appointments or complete and return the attached coupon using our Freepost service. All applications will be dealt with in the strictest confidence.

Ref. S4/2802

MYRIAD APPOINTMENTS LIMITED
30 Fleet London EC4Y 1AA Telephone 01-353 0981 24 hours

SEND TO: MYRIAD APPOINTMENTS LIMITED
FREPOST: LONDON EC4Y 1AA
I am interested in Ref: _____
Name _____
Address _____
Tel Day _____ Evening _____

Urgent Contracts

in the North of England:

HONEYWELL COBOL Programmers UNIVAC 1100 Programmers
IDMS Programmers
IBM 370 Assembler Programmers IBM 370 OS Systems Analyst

If you have at least two years experience and are considering opportunities in Contract work, telephone our Manchester office today and ask for BERNARD GIBBONS.

Please telephone (24 hour answer service) or write to apply Quote Ref: CW113-MG

CAPP ASSOCIATES Computer and Professional Personnel Consultants
LONDON and MANCHESTER
061-236 9085 Faulkner House, Faulkner Street, MANCHESTER M14 6YD

BRIGHTON POLYTECHNIC

Department of Computing and Cybernetics

Reader, Principal Lecturer Senior Lecturer in Computing

Applicants for the post of READER must have good academic qualifications and should be active research workers of proven ability in a relevant field of computing.

The successful candidate will be expected to provide leadership in research work, to co-ordinate research work within the Department and to foster contacts in the form of research projects and consultancy with Commerce, Industry and the Public Sector.

Applicants for the two teaching posts must have good academic and/or professional qualifications and should have substantial commercial/industrial and/or teaching experience in one or more of the following areas: Commercial Systems Analysis, COBOL programming, Computerised Information Systems, Database Management Systems, Design of Real-Time Systems, Distributed Processing Systems.

Salary Scales:
Reader £9469-£10362
Principal Lecturer £8259-£10362
Senior Lecturer £7062-£8871
Application forms and further details may be obtained from the Personnel Office, Brighton Polytechnic, Moulseburn, Brighton BN2 4AT.
Tel: Brighton 032355, Ext. 2537.
Closing date for receipt of applications: Two weeks after the publication of this advertisement.

EDINBURGH REGIONAL COMPUTING CENTRE

The Centre has two vacancies for Computing Officers.

1. SRC DECsystem-10 Group

A System Programmer

is required to assist in the maintenance of the TOPS-10 operating system and network software running on a large DEC-10 installation. The system is run by the Centre for the SRC's Interactive Computing Facility. It is currently part of a network having two DEC-10 systems and several computers with links to other mainframes. It is essential to have access to the X-28 based SRCNET which links to many other SRC machines.

This post will be suitable for a Computer Science graduate, or someone with previous DEC-10 experience, who is willing to take initiative and responsibility. The initial appointment will be for the period to 30th November 1982, but will be subject to review by November 1983 for the purpose of determining the position after 40th November 1983.

2. Software Services Group

A System Programmer

is required to work as a member of a team which is developing and supporting a number of compilers, and their related software environments on ICL 2900 series machines, using the Edinburgh Multi-Access System and the ICL VME/B and VME/K operating systems. Applicants are invited from Computer Science graduates or first year students. The appointment will be for three years in the first instance. Both appointments will be on the Assured Computing Officer scale, which is £4403-£5388 (from 1st April 1980), with superannuation under USS.

For further details and an application form contact: The Secretary, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9YL. (quoting reference 7002) to whom completed forms should be returned by 17th March 1980.

New Computing Dimensions in South Africa

For 3-year contracts or permanent positions

Barclays National Bank, the major banking force in South Africa, is on the threshold of building one of the largest computer networks in the world. This includes the development of new on-line financial systems for our large central mainframes, and a distributed processing system to service our 500+ branches throughout the vast expanse of the country. This will involve linking intelligent terminal systems and regional mainframes through an independent packet switched network.

Our current Hardware comprises:

IBM 370/158 • IBM 370/148 • ICL 2 x 2976 • ICL 1904S • ICL 2930/36 (multiple installations) • ICL 2903 (multiple installations)

and for delivery this year:

IBM 2 x 3033N • ICL 2936 (multiple installations) • CDC CYBER 18/30

At Barclays, we are committed to total career development, scientific training and the use of the latest techniques. We offer you the excitement of working overseas whilst enjoying the security provided by a large multi-national banking organization.

Living in South Africa, you can enjoy:

- * Cost of living and taxation lower than most western countries.
- * Unparalleled climatic conditions.
- * Gameparks, breathtaking scenery and tropical beaches.
- * Excellent schooling.
- * Excellent recreational and shopping facilities.

Data Comms.

Network Designers

To £16,500 p.a.*

With experience in the design and implementation of large networks with distributed intelligence. Experience of interfacing with manufacturers in the development of network software is essential. ICL, IBM or CDC experience will be an added advantage. The person appointed will specify and design network requirements, control procedures and terminal/mainframe interfaces.

Sizing Expert

To £16,500 p.a.*

With experience in the mathematical sizing of large networks with distributed intelligence. ICL, IBM or CDC experience will be beneficial as will familiarity with the use of computer packages for network simulation. Duties will include sizing of the total on-line system, from terminal to mainframe.

Senior Terminal Systems Designer

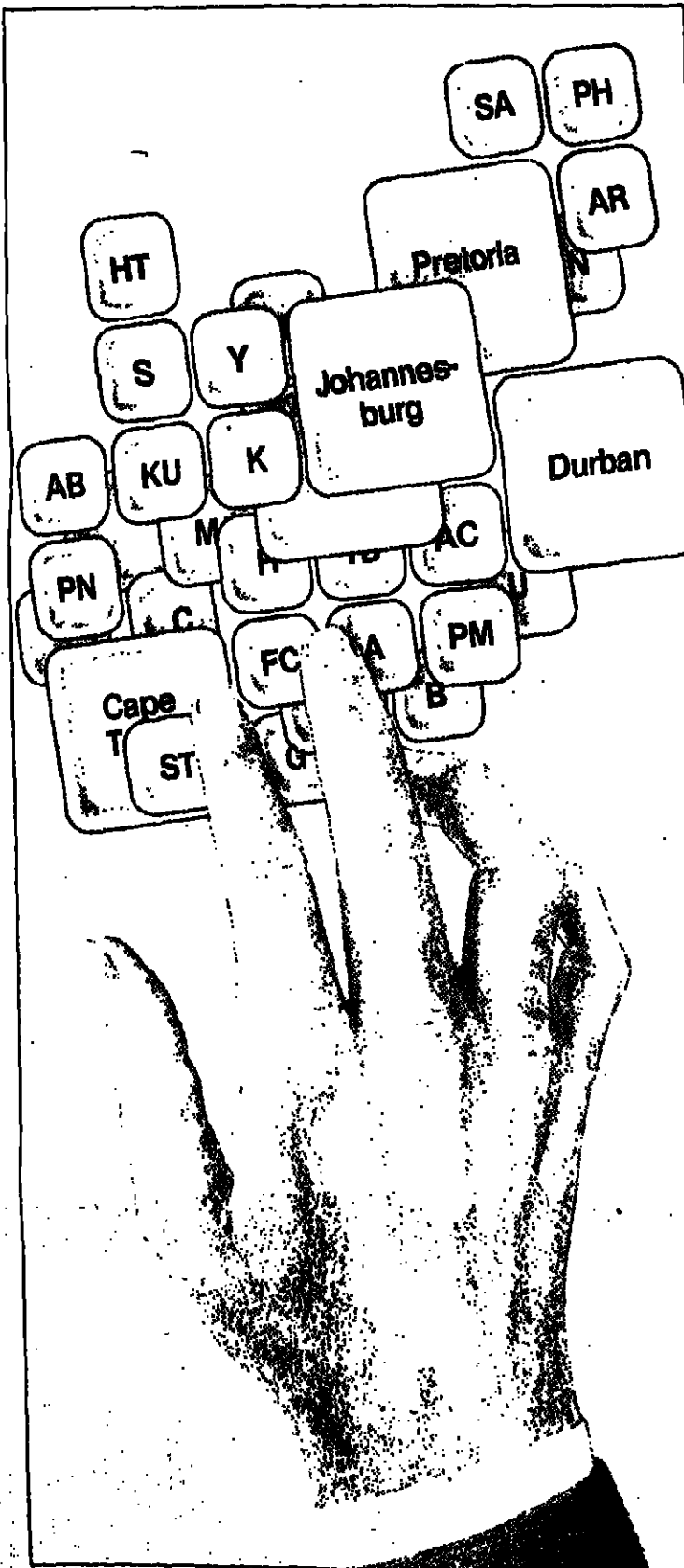
To £16,500 p.a.

With experience of terminal systems design on several different projects, knowledge of distributed intelligence systems and terminal programming techniques. Experience of large financial/accounting systems would be an advantage. The person appointed will be involved in the production of the functional specification of branch terminal systems, specification of the network interface software, systems design and creation of testing facilities.

Senior Designer — Integration Testing

To £16,500 p.a.*

With analysis experience and the ability to lead a project team. Further experience must include the implementation of at least one major on-line system and the testing of large on-line systems. The successful candidate



An equivalent network in Europe would have to link Bristol, Edinburgh, London, Berlin, Paris, Rome, Madrid and Lisbon.

will monitor unit testing of all systems components, develop strategic integration and systems testing, create testing aids and control integrals testing.

Senior On-Line Application Designers

To £16,500 p.a.*

With design experience of several different on-line applications and involvement in the implementation of at least one major on-line project. An essential requirement will be experience of distributed intelligence systems and large financial/accounting applications. Duties include the development of data entry, enquiry and report transmission applications control and co-ordination of programming effort and unit testing.

Senior Systems Analysts/Systems Analysts

To £11,500 p.a.*

With a proven record in Systems Analysis using advanced techniques. You will be responsible for the development of sophisticated financial systems on large mainframes. Persons at senior level will lead project teams.

Senior Systems Designers/Systems Designers

To £11,500 p.a.*

With experience of the designing of systems and the co-ordination of programmer effort. You will be responsible for the building of sophisticated systems utilizing the latest techniques, with the option of either IBM or ICL large mainframes.

Senior Programmers

To £10,000 p.a.*

With COBOL experience. Knowledge of IBM ASSEMBLER will be an advantage. Responsibilities will encompass the production of design specifications. Candidates must be prepared to use the latest techniques and work to standards.

*All salaries have been converted at the exchange rate of £1 = R1.81 (29.1.80).

Contract Benefits

- * Free air passages
- * Normal staff leave conditions from 18 - 33 working days depending on seniority
- * Shipping of personal effects — up to R750
- * Paid accommodation for up to two months after arrival
- * One return airfare for employee and family during term of contract
- * Return airfare for employee and family on completion of contract
- * Medical aid benefits
- * Low interest car and personal loans
- * Some of these appointments will be given the option of permanent employment after which they may become eligible for low rate mortgage facilities.

To apply:

Our recruiting team from South Africa will arrive in London on 1st March to conduct interviews. Please write with full career details to Steve Hairs, Barclays National Bank, 152 Upper Thames Street, London EC4A 3DF or phone him for an application form at 01-626 0588, ext. 8158.

South Manchester to £6000 1980's The Decade of Advancement Systems Analyst

Would you like a slice of the action? Our client, a leading manufacturing company seeks to recruit a Systems Analyst, preferably with about two years experience. A Programming background is not necessary but would be useful.

You will have responsibility for the installation and running of a high powered mini computer with planned teleprocessing links to other sites in the North West. The systems planned for implementation are financial, stock and production applications, previous experience in any of these would be an advantage.

Candidates for this position should be self-motivated and capable of taking responsibilities. The successful applicant will be an out-going person who communicates easily at all levels and will assume responsibility for all user contact and education.

Because this is a position with a large, international company all the usual 'big company' benefits apply and prospects for advancement are excellent. If this sounds like the type of challenge you need to start the 80's, then telephone or write now.

Please telephone (24 hour answer service) or write to apply Quote Ref: CW108-MG.

CAPP ASSOCIATES
01-686 9693

Computer and Professional Personnel Consultants

LONDON and MANCHESTER

Faulkner House, Faulkner Street, MANCHESTER M1 4YD

SERVICE ENGINEERS

ALL AREAS — £5,800 + 2-LITRE CAR + BONUSES (10%-15%)

A well-known mini-computer manufacturer is looking for a number of engineers for customer servicing throughout the U.K. If you are well-educated, preferably HNC level or equivalent and have had some service experience then this company can offer you a competitive salary, outstanding benefits and every opportunity for career progression. If you are interested contact us NOW.

A.S. EXECUTIVE (WEYBRIDGE)
CONSULTANTS — 0932-41321

UNIVERSITY OF LIVERPOOL
COMPUTER LABORATORY

SHIFT LEADER

To control basic team of five operators operating the University's Control ICL 1906S System under GEORGE IV on a three-shift basis. Duties also include operating an ICL 2904 and several CTL systems. The successful candidate will have had at least three years' experience of GEORGE III/IV, with proven ability of controlling other operators staff.

Basic salary (under review) will be on the scale of £188-£154 p.a. depending on age and experience, with an incongruity allowance (15%) additionally paid for three-shift working. Application forms may be obtained from the Registrar, The University, P.O. Box 147, Liverpool L69 3BX. Ref. RV/831/CW.

BLOOD, SWEAT AND FUN

Altergo Business Systems is one of the most successful and well-respected Software Consultancies in the U.K.

Specialising in IBM SYSTEM/34, ABS has established a reputation throughout the commercial world for high quality systems implemented by a team of over 70 professional Analysts and Programmers.

With the advent of SYSTEM/38 and our decision to write systems for the WANG VS, the future offers an unparalleled opportunity for people with RPG II OR COBOL experience to further their career and increase their earnings potential.

Blood, Sweat and Fun?

Yes, because we will reward hard work with a competitive salary plus overtime plus annual bonus plus expenses.

Plus Fun.

And Job Satisfaction.

Remember what that was?

Finally, consider the experience you will gain from one new project after another. A variety of applications for a variety of industries, throughout the U.K. and Europe.

So stop spitting Blood, Stop sweating for nothing. It's time to enjoy yourself.

Contact Bree

Altergo Business Systems Ltd.
London 01-734 8881 Brian Walker
Manchester 061-707 4399 Mike Carswell

altergo

NEXT WEEK

NORTHERN RECRUITMENT FEATURE



Advertisers are reminded that the next Computer Weekly area feature will be published on March 6th and will highlight career opportunities in the North.

Space reservations should be made as soon as possible to:

Owen Kelly — Manchester — 061-872 4211
Mark Pulver — London — 01-261 8097

Copy Deadline PM Friday before

COMPUTER WEEKLY
THE INDUSTRY'S WIDEST READ AND MOST REQUESTED NEWSPAPER

COMPUTER WEEKLY

the newspaper computer people rely on for

APPOINTMENTS

And there are five good reasons why recruitment advertisers rely on it, too.

92,000 PLUS CIRCULATION.

The largest in the field — and continually growing. It's rigorously controlled and updated to ensure maximum coverage of key computer personnel.

MORE REQUESTED COPIES.

Almost all readers either personally request or buy their copies — a claim no other computer journal can make.

HIGH QUALITY EDITORIAL.

A recent independent survey showed that Computer Weekly is considered the best journal for news — and the best medium for jobs — at all levels of the industry.

REGIONAL RECRUITMENT FEATURES.

They are editorially supported — and appear regularly.

HIGH RESPONSE RATE.

Even in today's tricky computer recruitment situation, a high response is regularly reported by advertisers.

FOR RESULTS, RECRUIT
COMPUTER WEEKLY

London: 01-261 8028/8019/8174
Manchester: 061-872 4211
Birmingham: 021-356 4838

Dorset House, Stamford Street, London SE1 1LU
Published by IPC Electrical/Electronic Press Ltd.

Setting new computer horizons * Opening new career prospects

MYRIAD

£11,000 + CAR

SOFTWARE DEVELOPMENT MANAGER

This position presents an outstanding opportunity for either a Departmental Programming Manager with a technical background or a person experienced in Systems Programming, to take responsibility for an expanding Software Development Team.

Joining a specialist group, the Software Development Manager will lead small teams developing a range of software products on IBM 370 and 4331 equipment.

This position offers an ideal opportunity for a SENIOR SYSTEMS PROGRAMMER who is seeking a positive career advancement into management whilst retaining a full technical involvement.

THAMES VALLEY

Liaising closely with technical support and marketing personnel to interpret and define future requirements, the successful candidate will contribute to the design of products in addition to identifying improvement potential in existing systems.

Candidates for this challenging role will have a strong IBM ASSEMBLER background, preferably gained at a DOS/VSE installation, and possess the personality to motivate and control a fast growing staff of technicians.

To cope with the ever-increasing demand for its products and to maintain its leading position in the software field, the Company has ambitious expansion plans, thus presenting the person appointed with considerable scope for career progression. A good starting salary is further enhanced by a company car and first-class conditions of employment, including generous relocation expenses where appropriate.

REF. S1/2802

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

Targa

BASIC + PROGRAMMERS
to £7000

C. London

A software house is currently undergoing a large recruitment campaign due to new products and enhancements on current systems. The minimum requirement is one year's BASIC/BASIC+ within a commercial environment. The rapid expansion of this software house within the last few years is simple proof of excellent career progression within a young and friendly environment. As well as an excellent starting salary (according to age and experience) the client also offers 6 monthly reviews and a car allowance.

JUNIOR PROGRAMMERS £NEG
All Areas

If you have at least one year's commercial experience in a Mini or Mainframe environment and feel that you are under-utilised or your career progression is poor, then do not hesitate to call us. We have many clients looking for Programmers at the Junior level in all areas of London and the Home Counties. Both salaries and perks are varied depending on the job but there are several financial institutions that offer Mortgage Subsidies.

COBOL PROGRAMMERS £6500
C. London

A large financial organisation is currently seeking Programmers at all levels. The salary indicated is for 2 years' COBOL experience. The present Mainframe is an ICL 1900 but a 2960 is in the process of being installed, this therefore makes it an exciting time for anyone joining the company at the moment. Although the hardware is ICL, this does NOT exclude applicants with good COBOL on other Mainframes. The company offers free lunches, season ticket loans, annual bonus, flexitime and an excellent Mortgage Subsidy.

IBM OS

Opportunities exist in South London for experienced operators to move off shifts. Salary negotiable around £8000.

IBM OS OPERATORS

Experienced staff required for 3-shift working in Central and North London. Good technical knowledge of OS/VSE essential.

IBM OS OPERATORS

Experienced operators required for site in West London to work 3 shifts. Multi machine and hardware environment.

IBM DOS SHIFT LEADER

An International bank in the City require an experienced Senior Operator or Shift Leader who is conversant with DOS/VSE and POWER/VSE.

IBM DOS OPERATORS

Vacancies in Central and West London for operators with a minimum of 12-18 months' experience. 2 and 3 shifts available.

IBM SYSTEM 3 OPERATORS

Sites in Central London require experienced operators to work various shift patterns on all models.

HONEYWELL OPERATORS

Vacancies exist for operators who have experience of GCOS or OS2000 in and around London.

Operations Support

£6500c

£6000c

£NEG

£5500c

£5000c

£NEG

ICL 1900/2903

Two operators with 12 months' experience. 3 shifts, limited night work. well-paid overtime, Xmas bonus, Central London.

ICL GII OPERATORS

12 months' GII experience required for Central London site. 3 shift system. good company benefits. Technical knowledge beneficial.

ICL GEORGE II SENIOR OPERATORS

North London site. 2 shifts, require GII operators with at least 12 months' experience. Training given on IBM Mainframe.

UNIVAC OPERATORS

Computer installations in London and Essex require Univac operators. 2 shifts, plenty of overtime, excellent pay rates and benefits.

MINI/PDP OPERATORS

Experienced operators required for numerous installations in London areas. Various shift patterns, salary up to £7000 and benefits.

N.C.R. OPERATORS

2 operators with at least 6 months' Criterion experience required by Central London site. 3-shift system.

DATA CONTROL

West London installations require Data Control staff. Experience in either IBM or ICL GII control procedures. Tremendous prospects.

TARGA COMPUTER SERVICES
46/47 LONDON WALL, LONDON EC2M 5TE
01-638 6381

★ HONEYWELL ★
★ LEVEL 66 ★

Long term contracts in the North West and North East
Contact Ken Grimsley on 0742 25069
Fraser Williams, St James House, Vicar Lane, Sheffield, S1 2EX

Fraser Williams
Computer Consultants

Royal Holloway College

COMPUTER
OPERATOR

Required for the Central Computer Services. The duties of the Computer Operator include operating with the operation of a CDC System 17 Computer and a CDC 1700 terminal, both connect to the University of London Computer Centre. Salary on scale £3542-£4446 (including London allowance). Applications in writing, giving age, qualifications and experience to Mrs. D. J. Orla, Personnel Officer, Royal Holloway College (University of London), Egham Hill, Egham, Surrey.

CONTRACTS £300 (Min.)

IBM Analyst, Banking, London. CICS Systems Engineer, London. Data General C350, London.

For various other requirements contact:
MONTREAL ASSOCIATE (SYSTEMS) LTD.
01-553 2944 (4 lines)
98-100 High Road, Ilford, Essex

SENIOR SYSTEMS
PROGRAMMER

IBM MVS £12,000 p.a. plus expenses

Permanent position for professional to join a highly successful small computer services company.
Surrey based — European travel 25%.
The job is to provide support services in the marketing of our well-known computer service. Relocation expenses paid.
Please reply in confidence to Box No. 1061, Computer Weekly or call 0276 62360

(2911)

IBM 4341 VM DOS/VSE DB/DC COBOL APL

In order to maximise the benefits of computers in local government, a significant expansion of the computer function has just been approved and a new organisation structure has been created to assist in running the computer installation and developing new projects in the 80's.

An IBM 370/138 is currently installed and operates under DOS/VSE and SHADOW II to provide both a batch and teleprocessing service. The processor is due to be replaced this Summer by an IBM 4341 operating under VM and DOS/VSE. Significant development is planned using data base and teleprocessing techniques.

All posts are open to men and women.

Generous relocation allowances are available to appropriate candidates

Appropriate training will be given where necessary.

Starting salaries would depend upon qualifications and experience.

Written applications should be sent to the Computer Manager, Gerald McDonough, P.O. Box 21, Civic Centre, Harrow, Middx

For further information and informal discussions please contact Gerald McDonough on 01-863 5611 Ext 2202

DEVELOPMENT
System Development
Project Managers

up to £10,600

Will report directly to the Computer Manager and each will lead a flexible team of up to ten analysts and programmers on major project development. They should have led at least one major project from conception to implementation and will be experienced in systems analysis and design. IBM experience is not essential.

Senior Systems Analyst

up to £8,300

Should be experienced analysts capable of undertaking analysis and design work on major projects unsupervised.

Lead Programmers

up to £8,300

Should be experienced programmers capable of leading a team of up to six programmers.

Senior Analyst Programmers

up to £7,800

Should be experienced COBOL programmers with some analysis experience.

Analyst Programmers

up to £7,500

Should be programmers with at least two years experience, preferably COBOL, wishing to move over to analysis work.

Programmers

up to £7,500

Should have at least one year's experience, preferably in COBOL.

OPERATIONS
Computer Centre Manager

up to £11,200

Responsible to the Computer Manager for all Operations and Systems Programming. Initially, the post holder will review standards and set up the Operations Section on a bureau basis with direct recharging and accountability to users. He/she will have had considerable experience in a similar environment.

Shift Leaders

up to £7,800

Should be experienced operators now able to lead a shift. Experience in VM, DOS/VSE, and teleprocessing would all be advantageous. The computer operates on a 5 day week — the two shifts covering 7.30 am — 11 pm. The salaries quoted include a generous shift allowance.

Control Officer

up to £5,800

Responsible for carrying out job set up and control work and would suit a control clerk or computer operator with job control experience.

SYSTEMS
Systems Programmers

up to £7,500

Responsible for generating, maintaining and developing VM, DOS/VSE, DB/DC and utility programs.

Harrow

If you see your future in any of these, then come and join us at

Data Processing
Operations Manager

c.£8,000

Bedfordshire

The Company, a forward thinking multinational manufacturer with its European headquarters in Bedfordshire, seeks a Data Processing Operations Manager.

The successful applicant will control the operations side of the Department, reporting to the Management Services Manager.

The person (male or female), we are looking for is likely to have both good technical EDP experience and management ability and must also be familiar with IBM 370 equipment, using database systems and telecommunications.

The current equipment is IBM 370/138 using DL/I providing rapidly expanding on-line systems as an integral part of the company operations.

Knowledge of software and database administration would be an added advantage.

This position offers a good career platform with opportunities leading to data processing management.

Please apply giving full details of career to date to:
D. W. Newman, Manager — Personnel Services
CUTLER-HAMMER EUROPA LIMITED
Granite Works, Elstow Road, Bedford, Tel. Bedford (0234) 67433



to £8 SYSTEMS PROGRAMMER

A major manufacturing and marketing organisation based in Bracknell is seeking a Systems Programmer with 2 years' DOS/VSE and a solid commercial applications background utilising PL/I or Assembler.

The successful candidate who will have the ability to assimilate new techniques will become part of a young dynamic team offering systems support to a "state of the art" IBM 3031 installation with future projects including the study and implementation of VM, distributive processing and a network of 4341 hardware to be located in five European locations.

First class benefits are offered including flexitime, modern offices, subsidised restaurant and staff shop. Relocation expenses will be paid if necessary.

IBM
3031

4341

DOS/VS

BERKSHIRE

Please telephone (24 hour answer service) or write to apply Quote Ref: CW111-F

CAPP ASSOCIATES Computer and Professional Personnel Consultants
LONDON and MANCHESTER
01-688 9663 AMP House, Ringway Road, CROYDON, SURREY

Specialist Staff

WE'RE EXPANDING!!

the software house with more rooms to move in

ON-LINE REAL-TIME SYSTEM

INTELLIGENT FILE HANDLING

DISTRIBUTED PROCESSING

MULTIPLE MINI-COMPUTER NETWORKS

INFORMATION HANDLING SYSTEMS

LARGE SCALE DATABASE SYSTEMS

MICRO-PROCESSOR DATABASE DEVELOPMENT

A world of modern computer technology and technique... all under a single roof. That's what Data Logic can offer you as an ambitious and independently-minded analyst or programmer with high level language or assembler experience.

Our job - as one of the UK's largest software houses - is to design and build systems unique to the needs of each customer. Our strength lies especially in large-scale, multi-site or multi-processor configurations which call for a combination of very advanced expertise and experience. The beauty of the business is that we're free from the constraints imposed by economy or practicality on the average user company. We can work with the widest selection of hardware - minis, micros and mainframes. We can apply and adapt the full range of current techniques and even invent our own if nothing in existence quite fits the bill. Our professionalism, innovation and versatility has brought us the respect - and the business - of every sector of industry and commerce.

Senior Systems Staff
(up to £9000 pa + car or car allowance)

should have at least 5 years' relevant experience including some work in consultancy, systems design or team management. You should have substantial knowledge either of high level language implementation on a leading mainframe, or assembler language development on DEC, Data General or other leading minicomputers. Ref: DB1/CW.

Programmers and Analyst/Programmers (up to £6500 pa)

should have at least 2 years' experience in a high-level language or assembler on any leading mainframe or mini. You'll work on projects as varied as database and distributed systems, data communications, telemetry and operating systems. Each will be planned to build on your existing experience and lead you towards career development into either management or senior specialist roles with a company that is backed by one of the world's biggest electronics and systems group, Raytheon. Ref: DB1/CW.

Your base location will be Soho Square, Greenford (Middlesex), the Midlands or the North but frequently an assignment will work in a project team at the customer's premises. Prospects are excellent. Data Logic has a wider business base and is growing faster than most of the industry, it is part of the giant International Raytheon group and those who join can look forward to a secure and challenging long-term future.

Please write with full career details, or phone for an application form, to: Barbara Hawkins, Personnel Department, Data Logic Limited, 26 High Street, Chesham, Bucks. Tel: Chesham (0294 05) 7111.

Data Logic
A Raytheon Company

Systems Programmers

Here at Burroughs Machines, Croydon, we are developing and implementing our next generation of micro-computer based terminals. To continue our lead in this field we need additional Programmers who are looking to apply their individual skills to the design and development of complete systems.

Our programmers are involved at all stages of a product, from initial concept through design and development into production. The systems programmers we are seeking will come from all areas. Our requirements spread across every level: from programmers with a wealth of experience looking for a new challenge, to recent graduates looking to develop a successful career in an expanding environment.

Involvement will cover a number of areas including Interactive Systems, Interpreters, User Interfaces and Hardware Diagnostic Test Routines. Previous experience in these areas would be an advantage but is not essential - enthusiasm and the ability to tackle a new challenge are more important.

You will be based at our Croydon Centre, although some travel will be necessary for you to fulfil your job responsibilities. Excellent opportunities exist for career development, both in the U.K. and overseas.

Salary will relate to individual experience and circumstances but will not be a limiting factor. Relocation assistance will be given where necessary.

For further details please contact:

Roddy Macdonald or
Enad Al-Kalanchi,
Burroughs Machines Ltd.,
512, Purley Way, Croydon,
Surrey, CR0 4NZ.
Tel: 01-888 0355. Ext. 228 and 280.

Burroughs

SENIOR SYSTEMS SOFTWARE ENGINEERS

The shape of communications to come

Are you interested in contributing your ideas and specialist software expertise to new generations of communications technology? At our Portsmouth Applied Electronics Laboratories we're building the nucleus of a new multi-discipline team of engineers to work on the communications concepts of tomorrow.

That means outstanding opportunities for career development and the chance to work with the very latest ideas in mini and micro based systems. Opportunities exist in the areas of Systems Engineering, Systems Software, Systems Architecture, Software Assurance, Equipment Technology.

To join us you should be qualified to Degree level and have a minimum of 2 years' experience of real-time software development, plus extensive knowledge

of interfacing with mini and micro systems hardware. You'll find our working conditions and facilities are excellent, and for men and women with the right kind of ability and creative talent, salary should present no obstacle. In addition, every assistance will be given with relocation where applicable.

Marconi Space & Defence Systems (Portsmouth)
A GEC-Marconi Electronics Company

NORTHERN RECRUITMENT FEATURE

MARCH 6th

FOR FURTHER INFORMATION

Contact: OWEN KELLY on 061-872 4211

HARDWARE SOFTWARE
CHOOSE YOUR CAREER THROUGH MAYFAIR APPOINTMENTS

ANALYST/PROGRAMMER
SALARY NEGOTIABLE PLUS CAR

This is an excellent opportunity for a person with a small team and involved from "GRASS ROOTS" of installation, mini computer to programming. If you have COBOL or basic language experience you should have called yesterday!

on 408 2022

MAYFAIR APPOINTMENTS
16 Berkeley Square
London W1

M

BOX Nos.

Box number replies should be addressed to:

Box No. c/o Computer Weekly
Dorset House
Stamford Street
London SE1 9LU

BOURNEMOUTH

SYSTEMS ANALYST

NCR CRITERION 8550

The company currently has an NCR Criterion 8550 Computer with 256K memory operating on both batch and On-Line applications.

We require a Systems Analyst aged 27/40 to join our progressive team, ideally with previous experience of NCR hardware and software. Experience in another discipline (e.g. Engineering or Accountancy) prior to moving into Data Processing would be an advantage.

This position requires an individual with the personality to communicate effectively with user departments to management level, and who can play a vital role in maintaining systems standards and controlling Project Implementation.

Please write giving brief relevant details to:

Manager - Personnel Services
THE DEVILBISS COMPANY LIMITED
Ringwood Rd, Bournemouth BH11 9LH

COMPUTER FIELD SERVICE

We are a rapidly growing company and wish to recruit the following staff:

1) UK FIELD SERVICE MANAGER

CIRCA £9,800

The successful applicant is likely to possess considerable field service experience and be capable of leading/motivating a team of field service engineers situated throughout the UK. This position is likely to suit a person who has already entered Management grade and now wishes to fulfil his potential in a rapidly expanding environment.

2) SENIOR TECHNICAL SUPPORT ENGINEERS

CIRCA £9,000

Applicants should possess considerable experience in Computer Field Service. Experience with mini-computers in a technical support capacity would be a distinct advantage. Extensive travel throughout Europe is envisaged.

We would also be interested in hearing from Engineers (qualified as above) with a strong communications background.

Please write to Box No. 1080, Computer Weekly

UNIVERSITY OF GLASGOW LECTURESHIP IN COMPUTING SCIENCE

Applications are invited for a post of Lecturer in the Department of Computing Science, to be held from 1st October, 1980. Salary will be within the range £5052-£7410 of the Lecturers' scale £5052-£10,484 (higher review), with placement according to age, qualifications and experience.

Further particulars may be obtained from the Secretary of the University of Glasgow, Glasgow G12 8QQ, to whom applications (in 3 copies), giving the name and addresses of three referees, should be sent not later than 31st March, 1980.

For reply please quote Ref. No. 4590C.

CONFIDENTIAL BOX NUMBER SERVICE

Advertisers who wish to have replies addressed to BOX NUMBERS have the assurance that no personal details or other information relating to their identity will be disclosed to enquirers.

READERS who do not wish their replies to be forwarded to a particular company or individual should enclose their letter in a sealed envelope, addressed to the Box Number in the usual manner, and post this together with a note giving details of whom any replies should not be forwarded, to the Box Number Manager, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU.

Letters not forwarded will be destroyed and no correspondence can be entered into.

CLASSIFIED COPY

All classified copy should reach our offices no later than 3.30 p.m. on the Monday preceding Thursday's publication.

If complete artwork is supplied, 11 a.m. on a Tuesday.

Ring Ray Kelly for further details on 01-261 8018.

COMPUTER WEEKLY CLASSIFIED

01 261 8028/8097/8018

the newspaper computer people rely on

UNIVERSITY OF SALFORD

PROGRAMMER

(Salary up to £8067 p.a.)

Required in the Registrar's Department: Administrative Computer Section which has an ICL 2904-50 computer with 48K words of store and on-line facilities.

Applicants should be experienced programmers with a background of writing COBOL and/or PL/I/AS programs. Practical experience of ICL 2903/4 software and on-line programming would be advantageous.

Telephone B. C. Thompson (Management Services Officer) on 061-738 5843 Ext. 7178 for further information or apply in writing to The Registrar, University of Salford, Salford M6 4WT, giving details of your salary, age, education and experience by 7 March 1980, quoting reference number A/684/CW.

BOX Nos.

Box number replies should be addressed to:

Box No. c/o Computer Weekly
Dorset House
Stamford Street
London SE1 9LU

SMR
Sales & Marketing Recruiters Ltd
Victory House, 99 Regent Street, London W1B 7JP

SALES EXECUTIVES

Now you've seen this week's selling jobs come and talk to us about a sales career.

Sales and Marketing Services is unique in its ability to provide facilities for Sales Training, Market Research and Psychological Analysis as well as the Recruitment of sales and sales support personnel. We have the skills to provide career guidance for sales and marketing personnel as well as having access to all the major computer organisations. Thus we are ideally equipped to find the right jobs with the best companies.

Come and speak with us soon.

TRADER

Tel: 01-734 9776

CONTRACT VACANCIES IN THE MIDLANDS AND SOUTH

FREELANCE PROGRAMMERS & ANALYSTS

COMPETITIVE RATES INTERESTING ASSIGNMENTS REGISTER NOW WITH THE SPECIALISTS PHONE 021-642 5118 (24 hours) or register or send your c.v. to PROJECT RECRUITMENT LIMITED, Fifth Floor, Seals House, Holloway Circus, Birmingham B1 1EQ. Licence No. M587

A member of the Capital Computer Systems Group.

Excellent Contract Opportunities

In line with our rapid growth rate we have a continuous requirement for skilled and dedicated professional contract staff.

MARK IV Analyst/Programmers
USA, West Africa, Germany and UK

IMS DB/DC Designers, City and Beds.
Assembler CICS or VTAM expert, Essex

DOS/VS Systems Programmers
Middle East

Systems 34 Analysts Programmers
City

UNIVAC DMS Analyst/Programmers
Essex

RPG Senior Programmers
Essex



For more information telephone:

Alan King
TALENT COMPUTER SERVICES
4 Eastern Road
Romford, Essex
Tel: Romford 44181/2 28238

UNIVERSITY OF LONDON COMPUTER CENTRE

Communications Network Support

The University of London Computer Centre has a vacancy in the Network Support Section of the Operations Group. The recruit will join a small group responsible for the day-to-day support of the Centre's extensive and expanding data communication network. The work is varied and involves the analysis and rectification of technical and operational problems, also liaison with users, staff and suppliers engineers.

Two shift working is required covering morning and limited evening shifts for which an allowance is paid. Applicants should have a minimum of B.O. levels, possession of 'A' level would be an advantage. Knowledge of electronic workshop practice and/or computer operations would be a definite advantage.

Starting salary within the range of £5881-£4876 (P.A. Inc.) depending on age and experience. Applications giving age, qualifications and previous employment to: MR B. BLACK, UNIVERSITY OF LONDON, COMPUTER CENTRE, 20 GUILDFOUR STREET, LONDON, W.C.1. Tel. 01-405 8400.

THE SALES BIT

More tips on starting at the top

LAST week I wrote about the reluctance of many salesmen, particularly the young and relatively inexperienced, to make their first approach at managing director level. While almost every salesman will acknowledge the benefits of contact at the very top of a client company, many are in awe of the status and authority of the chief executive. They take the softer approach at middle management level, in the firm belief that it will be easier to sell, whereas it usually results in more hassles and fewer decisions than would otherwise be experienced.

Of course, many salesmen would not dream of making their first sales approach at any level other than with the MD. Unfortunately a considerable proportion then proceed to throw away this benefit by putting entirely the wrong emphasis on the subsequent dialogue. As a general rule, managing directors are primarily interested in financial benefits, whereas middle management wants to know about performance and technical efficiency. Take for example the sale of a computer system for stock control. The warehouse manager will have a real influence on the final decision. He will be extremely interested in the equipment's efficiency in space utilisation, ease of use, industry compatible language processors, standard applications packages, disc access times, print speeds and so on.

On the other hand, the managing director's interest in such aspects of product selection will be virtually academic so long as middle management has no extreme objections. He wants to hear about savings related to future benefits which can bring about increased company growth and/or profitability. An approach to him might be made along these lines: "This system, which is already enjoying considerable success with many other companies in the same line of business as yourself, will not only bring about a significant reduction in your total stockholding - don't ever quote anticipated savings or improvements in percentage terms! - but also enable you considerably to reduce out-of-date stock, over-ordering and 'stock-outs', thus providing a higher level of customer service."

This means you will be able both to reduce capital investment in live and redundant stock and increase revenues by virtue of a more reliable stock availability for customers who might otherwise go to your competitors. This will make a considerable contribution to your company and provide you with management aids already being enjoyed by many of your competitors. Managing directors want to know about ways in which they can improve total company performance. This usually brings about a relative lack of interest in aesthetics, mechanics and the ambitions of divisional or departmental managers and concentration on those factors which are closely related to the company's, and therefore their own, survival.

More next week.

TRADER

ON THE MOVE

Gone to Brum

MICROCOMPUTER software designers and consultants Tridiana Micro Ltd have moved from Rushden, Northants, to new offices at Smithfield House, Digbeth, Birmingham, B5 8BS. Tel: 021-622 1754 and 6096/6.

Showrooms

THREE new showrooms will be opened by the Carter-Parratt Group in March and April. They are: Scotland, Capital Burn, Perth Road, Dunblane; Perth Road, Perth; and Crowne, 822848; Northants, Crowne House, Armley Road, Leeds LS12 2EJ. Tel: 0532 448961; South West, 1 Beaufort Place, Larkhall, Bath, Avon, BA1 8RP. Tel: 0226 331841.

processing systems is being brought into the West End in March. The address will be Carlton House, George Street, W1. Wang has also completed the moving of its Northern branch to Regent House, Heaton Lane, Stockport and its Midlands office to Eldon House, Coventry Road, Birmingham 26. The UK headquarters remain at Lower Richmond Road, Richmond, Surrey. Tel: 01-878 7821.

Bigger premises

MEMOREX UK has relocated its Bradford office to larger premises at 13 Springbank Place, the telephone number is Bradford (0274) 491211. Sales enquiries for the district will continue to be dealt with by the Altrincham office.

Wang changes

LONDON area sales service and training operation for Wang's computers and word processing systems will be moved to new premises at 52-54 Stafford Road, Wallington. The company's IBM 370/125, now replaced by an IBM 4331, is for sale.

370 for sale

THE IBM specialist software house, Micro 4-6, Wallington, Surrey, will shortly be moving to new premises at 52-54 Stafford Road, Wallington. The company's IBM 370/125, now replaced by an IBM 4331, is for sale.

New York

MOVING into new offices in New York, the US operations division of Artek Systems is now at 7 Haver Square in New York's Lower Manhattan.

Soft-ware

should be returned by 15 March 1980 - on forms available from: Mrs. P. Judson, NERC Scientific Services, Natural Environment Research Council, Polar House, North Star Avenue, Swindon, Wiltshire SN2 1EU. Tel. (0793) 40101 Extn. 431.